

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

GEORGE K. BURGESS, Director

DIRECTORY
OF
COMMERCIAL TESTING AND
COLLEGE RESEARCH
LABORATORIES

MISCELLANEOUS PUBLICATION No. 90

BUREAU OF STANDARDS PAMPHLETS ON TESTING

There are listed below a few of the official publications of the Bureau of Standards relating to certain phases of testing, including Scientific Papers (S), Technologic Papers (T), Circulars (C), and Miscellaneous Publications (M). Copies of the pamphlets can be obtained, at the prices stated, from the Superintendent of Documents, Government Printing Office, Washington, D. C. In ordering pamphlets from the Superintendent of Documents the bureau publication *symbol and number must be stated*, and the order must be accompanied by cash.

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- Paper and tracing cloth, specification and tests for the transparency of, C63. Price, 5 cents.
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- Potentiometers, the testing of, S223. Price, 15 cents.

(Continued on p. 3 of cover.)

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APRIL, 1927



PRICE 15 CENTS

Sold only by the Superintendent of Documents, Government Printing Office
Washington, D. C.

**UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON**

1927

IN ACCORDANCE with law the National Bureau of Standards makes tests and carries out investigations for other Government departments. Due to the large amount of this official work it is impracticable for the bureau to make tests for private individuals if other laboratories can do the work. To inform interested persons of the location of other laboratories, the bureau has compiled a list of the 207 commercial testing laboratories throughout the country, together with indications of the types of commodities which they are prepared to test. Special care has been exercised to make this list complete. There is also presented a list of the laboratories of 143 colleges which are used not only for purposes of instruction but also to a considerable extent for research work.

An outline is given of the certification plan in accordance with which there have already been compiled 48 lists of manufacturers who have expressed their willingness to certify to purchasers that material supplied on orders based on the indicated 48 United States Government master specifications complies with the requirements and tests of these specifications.

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COMMERCIAL TESTING LABORATORIES

In recognition of the desirability under present conditions of independent commercial testing service and in anticipation of a marked increase in the demand for such service in both domestic and export trade, the National Bureau of Standards has compiled the accompanying list of laboratories throughout the country that are prepared to test various kinds of commodities to determine whether or not they comply with purchase specifications.

The existence of a thoroughly classified list of commercial testing laboratories will have a number of beneficial effects in promoting the use of specifications, not the least important of which will be the inducement offered to the large number of purchasers who have hitherto hesitated to buy on specifications.

Heretofore purchasers not individually equipped to make their own acceptance tests have been reluctant to adopt the specification method of buying commodities because of the fixed belief that many manufacturers work off "seconds" on such customers. The knowledge that they can at any time, when they so desire, call upon testing laboratories to check the deliveries made to them on contracts based on specifications will induce a large number of such purchasers to take full advantage of the specification method of purchasing.

The outstanding fact in the specification situation at the present time is that a very great majority of the purchasers who should be using specifications are not doing so. It is to this great group of purchasers that the accompanying lists of laboratories will prove most beneficial. If, in addition to obtaining copies of as good specifications as can be written at the present time, all purchasers are able to secure lists of firms willing to manufacture to these specifications and to certify to compliance therewith, and lists of testing laboratories and checking agencies, many of these purchasers will readily adopt the specification method of buying. This is especially true of the purchasers of States and municipalities who are anxious to use specifications, but have not thus far felt justified in doing so because of inability to determine whether or not the commodities comply with the specification requirements.

The application of the plan here outlined will mean that more manufacturers than at present will be in need of testing and inspection services upon which to base such certificates as they may be asked to issue to consumers buying upon nationally recognized specifications. Moreover, to the extent that the application of the plan will result in the use of specifications by purchasers not now buying on specifications, it will create a demand for testing service on behalf of the buyers. In any event, numerous consumers will resort to such tests as may be considered necessary or desirable to satisfy themselves that the commodities do actually comply with the specifications. It seems evident, therefore, that the widespread application of the plan must result in a greatly increased need for testing service by both the producers and consumers.

In the accompanying list of commercial testing laboratories the laboratories have been arranged alphabetically in accordance with the geographical locations of the laboratories. Numerical references are used to indicate the types of commodities tested, and alphabetical references indicate the nature of the tests.

SYMBOLIC REFERENCES TO NATURE OF TESTS

Symbolic references to nature of tests made are as follows:

a=Appearance, optical, microscopical.
b=Bacteriological, biological, pathological.
c=Chemical.
h=Heat, thermal, refractory.
i=Inspection, supervision, construction.
j=Lubrication.

m=Metallographic, metallurgical.
p=Physical, mechanical.
s=Service, performance, calibration.
t=Toxicological.
x=X ray, radiographic.

CLASSIFICATION OF COMMODITIES TESTED

The following classification is used to indicate the types of commodities tested and the numerical references thereto:

000-099=ANIMALS AND ANIMAL PRODUCTS (EXCEPT WOOL AND HAIR).

- 000=Animals.
- 010=Meats.
- 020=Dairy products.
- 030=Fish.
- 040=Animal and fish oils, fats, and grease.
- 050=Hides and skins, raw (except furs).
- 060=Leather and leather manufactures.
- 070=Furs.
- 090=Miscellaneous animal products.

100-199=VEGETABLE FOOD PRODUCTS, OILSEEDS, EXPRESSED OILS, AND BEVERAGES.

- 100=Grains and preparations.
- 110=Fodders and feeds.
- 120=Vegetables.
- 130=Fruits and nuts.
- 140=Oilseeds and vegetable oils and fats.
- 150=Cocoa, coffee, tea, condiments, and leavening agents.
- 160=Sugar, molasses, sirups, honey, and confectionery.
- 170=Beverages.

200-299=VEGETABLE PRODUCTS EXCEPT FOOD, FIBERS AND WOOD.

- 200=Rubber and similar gums and manufactures thereof.
- 210=Gums, resins, and balsams.
- 220=Crude drugs and essential oils.
- 230=Dyeing and tanning materials of vegetable origin.
- 240=Seeds (except oilseeds).
- 250=Nursery and greenhouse stock.
- 260=Tobacco.
- 280=Starch and vegetable glue.
- 290=Miscellaneous vegetable products.

300-399=TEXTILES.

- 300=Cotton, cotton fabrics, and knit goods.
- 310=Manufactures of cotton.
- 320=Jute and jute manufactures.
- 330=Flax, hemp, and ramie.
- 340=Other vegetable fibers, straw, or grass.
- 360=Wool and hair, and manufactures thereof.
- 370=Silk and manufactures thereof.
- 390=Miscellaneous textile products.

400-499=WOOD AND PAPER.

- 400=Lumber (logs, timber, and other manufactured or partly manufactured wood).
- 410=Lumber for building and factory use.
- 420=Manufactures of wood (except furniture).
- 430=Furniture of wood.
- 470=Paper (except printed matter).
- 480=Books and other printed matter.
- 490=Miscellaneous paper products.

500-599=NONMETALLIC MINERALS.

- 500=Coal, petroleum, asphalt, and mineral wax.
- 510=Stone, sand, and cementitious materials.
- 520=Glass and glass products.

530=Clay and clay products.

- 540=Abrasive materials, asbestos, and chalk.
- 550=Mica and rare minerals.
- 560=Precious stones and imitations.
- 570=Sulphur, magnesia, salt, and graphite.
- 590=Other nonmetallic minerals.

600-699=ORES, METALS, AND MANUFACTURES (EXCEPT MACHINERY AND VEHICLES).

- 600=Iron and steel.
- 610=Iron and steel manufactures.
- 620=Ferro-alloying ores, metals, and manufactures.
- 630=Aluminum, antimony, bismuth, cadmium, and cobalt.
- 640=Copper, brass, and bronze.
- 650=Lead, mercury, and nickel.
- 660=Precious metals, jewelry, and plated ware.
- 670=Clocks, watches, and dials.
- 680=Tin and zinc.
- 690=Other ores, metals, alloys, and metal manufactures.

700-799=MACHINERY AND VEHICLES.

- 700=Power-generating machinery (except electric).
- 710=Electric machinery and supplies.
- 720=Vehicles (except agricultural).
- 730=Agricultural machinery and implements.
- 740=Construction, conveying, and hoisting machinery.
- 750=Mining, oil well, and pumping machinery.
- 760=Metal-working machinery.
- 770=Textile, sewing, and shoe machinery.
- 780=Other industrial plant machinery.
- 790=Miscellaneous industrial plant auxiliary equipment.

800-899=CHEMICALS AND ALLIED PRODUCTS.

- 800=Coal-tar products.
- 810=Medicinal and pharmaceutical preparations.
- 820=Acids (except coal-tar), anhydrides, alcohol, etc.
- 830=Other chemicals.
- 840=Pigments, paints, and varnishes.
- 850=Fertilizers and fertilizer materials.
- 860=Explosives, fireworks, and ammunition.
- 870=Soaps, cosmetics, and toilet preparations.
- 880=Disinfectants and water treatments.
- 890=Miscellaneous chemical products.

900-999=COMMODITIES NOT ELSEWHERE CLASSIFIED.

- 910=Scientific and professional apparatus and supplies.
- 920=Musical instruments.
- 930=Office, printing, lithographic, and educational supplies.
- 940=Toys, athletic and sporting goods.
- 950=Containers.
- 970=Fire-extinguishing apparatus and supplies.
- 980=Brushes and brooms.
- 990=Miscellaneous articles.

Example of use of numerical and symbolic references:
600cpm is to be interpreted as "Iron and steel tested chemically, physically, and metallographically."

GEOGRAPHICAL LISTING OF LABORATORIES

ALABAMA

Name and address of laboratories	Commodities and nature of tests ¹
BIRMINGHAM:	
Froehling & Robertson (Inc.)-----	See Richmond.
R. W. Hunt Co., 420 Alabama Power Building.	See Pittsburgh.
Pittsburgh Testing Laboratory, 215 Clark Building.	See Pittsburgh.
Smith-Emery Co-----	See Los Angeles.
Southern Testing Laboratories, Brokers Building (branches at Lakeland, Jacksonville, Tampa, Fla.).	400p, 410p, 500cp, 510cp, 530cp, 600cp, 610cp, 620cp, 630cp, 680cp, 690cp, 720p, (railway equipment) 850c, 880c.
LEEDS: Pittsburgh Testing Laboratory-----	See Pittsburgh.
MONTGOMERY: Battle Laboratory, 103 South Court Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 850c.
RAGLAND:	
Froehling & Robertson (Inc.)-----	See Richmond.
Pittsburgh Testing Laboratory-----	See Pittsburgh.

ARIZONA

BISBEE: Motz Engineering Co., P. O. Box 919--	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
KINGMAN: E. Ross Householder-----	640c, 660c, 680c.
NOGALES: Miller's Assay Office-----	500c, 640c, 660c, 680c.
PATAGONIA: Patagonia Engineering & Assay Co.	600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
TUCSON: A. L. Tellegrin & Son, 100 South Stone Avenue.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 850c.

ARKANSAS

LITTLE ROCK: Barrow-Agee Laboratories (Inc.)--	See Memphis.
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CALIFORNIA

FRESNO: The Twining Laboratories, 2146-2148 Merced Street.	010cb, 020cb, 030cb, 040cpa, 050cpa, 060cpa, 070cpa, 090cpa, 100cas, 110cas, 120cas, 130cas, 140cas, 150cas, 160cas, 170cas, 200cpas, 210cpas, 220cpas, 230cpas, 240ca, 250sb, 260sb, 280ca, 290ca, 300cp, 310cp, 320cp, 330cp, 340cp, 360ca, 370ca, 390ca, 400p, 410p, 420p, 430p, 470pc, 480s, 490s, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620c, 630c, 640c, 650c, 660cp, 670s, 680cp, 690cp, 700s, 710s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 810c, 820c, 830cp, 840cp, 850c, 860c, 870c, 880cb, 890c, 910s, 920s, 930s, 940s, 950s, 970s, 980s, 990s.
LOS ANGELES:	
Atkins & McRae, 747 South Hill Street----	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Baverstock & Payne, 223 West First Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
John Herman, 339 South Los Angeles Street.	600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Robert W. Hunt Co., 516 Citizens National Bank Building.	See Chicago.
Los Angeles Testing Laboratory, 1300 South Los Angeles Street.	010cp, 020cp, 030cp, 040cp, 090cp, 100cp, 110cp, 120cp, 130cp, 140cp, 150cp, 160cp, 170cp, 200cp, 210cp, 220cp, 230cp, 240cp, 300cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400cp, 410cp, 420cp, 430cp, 470cp, 480cp, 490cp, 500cp, 510cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 670cp, 680cp, 690cp, 700p, 710p, 720p, 730p, 740p, 750p, 760p, 770p, 780p, 790p, 800cp, 810cp, 820cp, 830cp, 840cp, 850cp, 860cp, 870cp, 880cp, 890cp, 910cp, 930cp, 940cp, 950cp, 970cp, 980cp, 990cp.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

CALIFORNIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
LOS ANGELES—Continued.	
Arthur R. Maas Laboratories, 308, East Eighth Street.	000c, 010c, 020c, 030c, 040c, 050c, 060c, 070c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 470c (paper pulp), 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 670c, 680c, 690c, 810c, 840c, 850c, 880c, 970c.
Smith-Emery Co., 245 South Los Angeles Street (branches at Seattle, San Francisco, Pittsburgh, Chicago, New York, Birmingham, Pueblo, Glasgow, Montreal).	020c, 030c, 040c, 090c (glue), 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200cp, 210c, 280c, 290c, 320p (rope), 330p (rope), 340p, 410p, 470c, 500cp, 510cp, 520c, 530cp, 540cp, 550c, 570c, 590c, 600cp, 610p, 620c, 630c, 640cp, 650cp, 660c, 680c, 690c, 700i, 740i, 750i, 800c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910p, 930c (inks).
Western Precipitation Co., 1016 West Ninth Street (eastern office at New York City).	010c, 020c, 030c, 040c, 060c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 260c, 280c, 290c, 300c, 310c, 340c, 370c, 390c, 400c, 470c, 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 970c, 990c.
SAN FRANCISCO:	
Curtis & Tompkins, 331 California Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500c (fuel), 520c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 850c.
A. A. Hanks (Inc.), 624 Sacramento Street.	140c, 500c, 510cp, 660c.
Robert W. Hunt Co., 251 Kearney Street.	See Chicago.
Charles C. Kavin Co., 693 Mission Street.	See Chicago.
H. E. Morse, 954 Howard Street.	600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
Pacific Chemical Laboratories, 417 Montgomery Street.	010c, 040c, 050c, 060c, 090c, 100cp, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 230c, 260c, 280c, 300p, 360p, 370p, 390p, 500cp, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Smith-Emery Co.	See Los Angeles.

COLORADO

COLORADO SPRINGS: E. C. Woodward, 21 East Kiocoa Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
DENVER:	
Wm. Ainsworth & Sons (Inc.), 2151 Lawrence Street.	500s (transformer oil), 700s, 710s, 910s.
Paul S. Nice, 312 Seventeenth Street.	530p.
J. W. Richards & Son, 1118 Nineteenth Street.	020c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 470c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 890c.
Root & Simpson, 1744 Broadway.	640cm, 660cm, 680c.
Western Research Corporation, 514 Eighteenth Street.	500c, 640c, 680c.
Wilson & Ward (Inc.).	See Chicago.
Henry E. Wood Assaying Co., 1730 Arapahoe Street.	500c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm.
PUEBLO: Smith-Emery Co.	See Los Angeles.

CONNECTICUT

BRIDGEPORT: Bridgeport Testing Laboratory, 41 Cannon Street.	010c, 020c, 040c, 100c, 110c, 150c, 170cp, 500cp, 570c, 600cp, 610c, 620c, 630c, 640cp, 650c, 680c, 690c, 850c, 870c, 880c, 890c.
HARTFORD:	
The Stanley P. Rockwell Co., 66 Trumbull Street.	600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm.
The Henry Souther Engineering Co., 11 Laurel Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 410p, 500h, 510p, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 880c.
State Highway Commissioner, Highway Department.	500cp (tar), 510cp.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

DISTRICT OF COLUMBIA

Name and address of laboratories	Commodities and nature of tests ¹
WASHINGTON: Industrial Research Laboratories, 2201 New York Avenue NW.	040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 260c, 280c, 290c, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 470cpa, 490cpa, 500cp, 510cp, 520c, 530cp, 540cp, 550c, 570c, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800c, 810c, 820c, 830c, 840cpa, 850c, 870c, 880c, 890c.
F. R. McGowan, 527 Transportation Building.	070a, 300psca, 310psca, 320psca, 330psca, 340psca, 360psca, 370psca, 390psca, 770s, 870cs, 910s, 940p. 950p, 980s.

FLORIDA

JACKSONVILLE: Robert W. Hunt Co., 716 Professional Building.	<i>See Chicago.</i>
Southern Testing Laboratories, 127 Talley- rand Avenue.	<i>See Birmingham.</i>
LAKELAND: Southern Testing Laboratories, P. O. Box 1072.	<i>See Birmingham.</i>
MIAMI: Pittsburgh Testing Laboratory-----	<i>See Pittsburgh.</i>
TAMPA: Pittsburgh Testing Laboratory-----	<i>See Pittsburgh.</i>
Southern Testing Laboratories-----	<i>See Birmingham.</i>

GEORGIA

ATLANTA: Atlanta Paving Laboratory, 421½ Mari- etta Street (branch at Chattanooga).	300cp, 310cp, 500cp, 510cp, 570cp, 590c, 600cp, 610cp, 800c, 850c.
The Dumas Laboratory, 10½ Auburn Avenue.	000c, 010c, 020c, 040c, 090c (glue), 110c, 140c, 150c, 170c, 500c, 510c, 530c, 540c, 570c, 600c, 630c, 640c, 650c, 680c, 840c, 850c, 870c, 880c, 930c (inks).
Frøehling & Robertson (Inc.)-----	<i>See Richmond.</i>
Law & Co., Walton Building-----	<i>See Wilmington, N. C.</i>
Dr. Poole Maynard-----	500c.
EAST POINT: Georgia State Highway Depart- ment, P. O. Box 147.	400i, 500s, 510s, 530s, 600c, 800c (creosote oil and tar for roads), 840c.

ILLINOIS

CHICAGO: American Bureau of Inspection and Tests, 53 West Jackson Boulevard.	510cp, 600cp, 610cp.
Block Laboratories, 612 North Michigan Boulevard, 222 East Ontario Street.	010c, 020c, 030c, 040c, 050c, 060c, 070c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210cp, 280cp, 500c, 630c, 640c, 650c, 660c, 680c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Dr. George Borrowman, chemist, 9 South Clinton Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Chicago Paving Laboratory, 536 Lake Shore Drive.	410p, 500cp, 510cp, 530cp.
Commercial Testing and Engineering Co., 1785 Old Colony Building (branch at Charleston, W. Va.).	500c, 510c, 520c, 530c, 540c, 570c.
Deavitt Laboratories (Inc.), 209 South La Salle Street.	000c, 010c, 020c, 040c, 060c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 250c, 280c, 290c, 300c, 310c, 360c, 370c, 390c, 400c, 470c, 490c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 930c, 980s, 990c.
Gulick-Henderson Co. (Inc.), 431 South Dearborn Street.	<i>See New York.</i>

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

ILLINOIS—Continued

Name and address of laboratories	Commodities and nature of tests ¹
CHICAGO—Continued.	
E. F. Houghton & Co., 3516 Shields Avenue. Robert W. Hunt Co., 2200 Insurance Exchange (branches at New York; Pittsburgh; St. Louis; Jacksonville; San Francisco; Kansas City, Mo.; Seattle; Dallas; Montreal (1001 McGill Building); Toronto (1303 Bank of Hamilton Building); Vancouver (1527 Standard Bank Building); New Orleans; Philadelphia; London, England (34/40 Ludgate Hill, EC-4); Cleveland; Los Angeles; Portland; Cincinnati).	<i>See Philadelphia.</i> 060cp, 140c, 200c, 210c, 300c, 340c, 360c, 390c, 400p, 410p, 420p, 470c, 500cp, 510cp, 520cp, 530cp, 570cp, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 720s, 740s, 750s, 760s, 790s, 800c, 840c, 860c, 880c, 950p, 970p.
Industrial Research Laboratories of Peter Dengler (Inc.), 124 West Kinzie Street. Charles C. Kawin Co., 431 South Dearborn Street (branches at Buffalo, Cincinnati, San Francisco).	020c, 120c, 130c, 140c, 150c, 160c, 220c, 230c, 260c, 280c, 480c, 490c, 550c, 800c, 810c, 870c, 890c. 500c (coal), 510c, 530c, 540c, 550c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm.
R. H. Laverie & Sons----- Mariner & Hoskins, 111 West Monroe Street.	<i>See New York.</i> 140c, 150c, 160c, 200c, 210c, 280c, 470c, 500c, 510c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Miner Laboratories, 9 South Clinton Street.	010c, 020c, 030c, 040c, 050c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 230c, 300cp, 360cp, 370cp, 390cp, 630c, 640c, 680c, 690c, 850c, 870c, 880c, 890c, 470cp.
Paper Laboratories (Inc.), 1700 Prairie Avenue.	<i>See Pittsburgh.</i>
Pittsburgh Testing Laboratory, Old Colony Building.	
Research Laboratory of the Portland Cement Association, 33 West Grand Avenue.	400p, 410p, 510cp, 600p, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Siebel Institute of Technology, 960 Montana Street.	020c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 280c, 290c, 500c, 820c, 840c, 870c, 880c.
Smith-Emery Co.-----	<i>See Los Angeles.</i>
Structural Materials Research Laboratory, 1951 West Madison Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Wilson & Ward (Inc.), 608 South Dearborn Street (branches at New York; Pittsburgh; Cleveland; St. Louis; Kansas City, Mo.; Denver; Philadelphia).	010c, 020c, 030c, 040c, 050c, 060cp, 070c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 250c, 260c, 280c, 290c, 300cp, 310c, 320c, 330c, 340c, 360cp, 370c, 390c, 400ci, 410ci, 420ci, 430ci, 470cp, 480cp, 490cp, 500c, 510cp, 520c, 530cp, 540cp, 550c, 560c, 570c, 590c, 600cp, 610cp, 620cp, 630c, 640c, 650c, 660c, 670ci, 680c, 690c, 700pi, 710pi, 720pi, 730pi, 740pi, 750p, 760p, 770p, 780p, 790p, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910cp, 920i, 930ci, 940ci, 950p, 970cp, 980cp, 990cp.

INDIANA

FORT WAYNE: Michigan Engineering Laboratories (Inc.).

See Detroit.

IOWA

DES MOINES: Patzig Testing Laboratories, 210 Eleventh Street.

400p, 410p, 500cp, 510cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800cp, 840cp, 850cp, 880c.

KANSAS

BAXTER SPRINGS: Waring & Williams Laboratories.

*See Joplin, Mo.*¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

KENTUCKY

Name and address of laboratories	Commodities and nature of tests ¹
LOUISVILLE: Janes & Breckler (Inc.), 107 South Fourth Street.	020c, 110c, 260c, 400c, 500c, 510i, 570c (salt), 590c (flourspar, barite), 600cp, 610cp, 620cp, 640c, 650c, 680c, 800c (creosote, tars), 840c, 850c.

LOUISIANA

NEW ORLEANS: Robert W. Hunt Co., 919 Carondelet Building. Frank W. Liepsner, 420 Camp Street.-----	See Chicago. 020c, 040c, 100c, 110c, 140c, 150c, 160c, 170c, 500c, 510cp, 620c, 630c, 650c, 660c, 680c, 690c, 800c, 840c, 850c, 870c, 890c. 100cs (rice).
The Rice Millers' Association, P. O. Box 1289. Herbert M. Shilstone Co., 302 Camp Street.	100c, 160c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
SHREVEPORT: Barrow-Agee Laboratories (Inc.).	See Memphis.

MAINE

LEWISTON: A. B. Andrews, 14 Lisbon Street.---	400c, 470c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 910c (clinical materials).
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MARYLAND

BALTIMORE: Penniman & Browne, 341 Courtland Street.	020cb, 040cb, 050cb, 060cp, 090cb, 100cb, 110cb, 130cb, 140c, 150c, 160c, 170c, 200cp, 210c, 220c, 230c, 280c, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910s, 970s, 980s, 990s.
UNION BRIDGE: Froehling & Robertson (Inc.).--	See Richmond.

MASSACHUSETTS

BOSTON: Cotton Research Co. (Inc.), 1020 Washington Street. Winthrop C. Durfee, 516 Atlantic Avenue. Skinner, Sherman & Esselen (Inc.), 276 Stuart Street.	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470cp. 230c, 300c, 310c, 360c, 370c, 800c. 010cb, 020cb, 030c, 040c, 060cb, 090cb, 100cb, 110cb, 120cb, 130cb, 140c, 150cb, 160cb, 170cb, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470cp, 490cp, 500cp, 510cp, 530cp, 540cp, 550cp, 570c, 590c, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800cp, 810cb, 820c, 830c, 840c, 850c, 870c, 880cb, 890c.
The Thompson & Lichtner Co. (Inc.), 80 Federal Street. Dr. Lothar E. Weber, consulting rubber chemist, 729 Boylston Street. J. R. Worcester & Co., 79 Milk Street.-----	200cp, 410p, 510ep, 530cp, 600cpi, 610cpi. 200c, 300p, 310p. 510p, 530p.
CAMBRIDGE: General Radio Co., Massachusetts Avenue and Windsor Street. George B. Haven, consulting engineer, Massachusetts Institute of Technology. Arthur D. Little (Inc.), Charles River Road at Kendall Square.	710s (radio), 910s. 300pc, 310p, 320p, 330p, 340p, 360p, 370p, 390p. 010c, 020cb, 040c, 060c, 090cb, 100c, 110c, 120cb, 130c, 140c, 150c, 160cb, 170cb, 200cp, 210c, 220c, 230c, 260c, 280c, 300cpa, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp (rayon), 470cpa, 480cpa, 490cpa, 500pch, 510pc, 520pc, 530pc, 540pc, 570c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700pc (wires, cables), 740pc (rope), 800c, 820c, 840c, 850c, 870c, 880cb, 890c, 930c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

MASSACHUSETTS—Continued

Name and address of laboratories	Commodities and nature of tests ¹
NEW BEDFORD: United States Testing Co. (Inc.)— PEABODY: The R. & M. Laboratories----- SPRINGFIELD: The Emerson Co., 145 Chestnut Street---- New England Laboratories, 121 Chestnut Street.	See Hoboken. 060cp, 230c. 470cp, 510cp. 470cp (pulp and paper), 500hl, 510c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 830c, 880c.

MICHIGAN

DETROIT: The Detroit Testing Laboratory, 554 Bagley Avenue.	010cb, 020cb, 040cb, 050cb, 060cp, 090cb, 100cb, 110cb, 120cb, 130cb, 140cb, 150cb, 160cb, 170cb, 200cp, 210c, 220c, 230cp, 260c, 280cp, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400cp, 410cp, 420cp, 430cp, 470cp, 480cp, 490cp, 500cp, 510cp, 530cp, 540c, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700p, 710p, 730p, 800c, 810c, 820c, 830c, 840cp, 850c, 860c, 870c, 880cb, 890cb, 930cp, 940p, 950p, 970p, 980p, 990cp.
Michigan Engineering Laboratories (Inc.), 2847 Grand River Avenue (branch at Fort Wayne).	500clh, 510cp, 800c, 870c.
Perry Testing Laboratory, 210 Third Street.	200cp, 280c, 300cp, 320cp, 330cp, 340cp, 360cp, 370cp, 400p, 410p, 470pc, 500c, 510cp, 520cp, 530cp, 540cp, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 820c, 830c, 840c, 880c, 890c.
Pittsburgh Testing Laboratory----- United Laboratories, 161 Larned Street, West.	See Pittsburgh. 500c (coal), 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
JACKSON: Office of Building Inspector.	510cp.

MINNESOTA

DULUTH; Minnesota Testing Laboratories (Inc.), Glencoe Building.	020c, 100c, 110c, 140c, 500c, 510cp, 530cp, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 690cp, 700s, 790s, 830c, 840c, 850c.
MINNEAPOLIS: J. R. Hoven, 424 Tribune Annex----- The Howard Wheat and Flour Testing Laboratory, Old Colony Building. Van Cleve Laboratories (Inc.), 322 South Fourth Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c. 020c, 100cs, 110c, 120c, 140c, 150c, 160c, 170c, 280c, 850c. 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 800cp, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 990cp.

MISSISSIPPI

JACKSON: Barrow-Agee Laboratories (Inc.)----- R. M. Striger, chemist, P. O. Box 155----	See Memphis. 020c, 110c, 140c, 500c, 510cp, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 850c.
MERIDIAN: N. E. Katz, consulting and analyti- cal chemist, 309 Cochran Building.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 240b, 260c, 390c (rayon), 500cp, 510c, 530c, 570c, 810c, 820c, 850c, 870c, 880c.

MISSOURI

JEFFERSON CITY: Missouri State Highway Commission, High Street.	410p, 500c, 510cp, 530cp, 600cp, 610cp, 840c, 880c.
JOPLIN: Waring & Williams Laboratories (branches at Baxter Springs, Kans.; Webb City, Mo.; Cardin and Picher, Okla.).	010c, 040c, 110c, 160c, 170c, 500c, 510c, 520c, 530c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 820c, 830c, 840c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

MISSOURI—Continued

Name and address of laboratories	Commodities and nature of tests ¹
KANSAS CITY: Robert W. Hunt Co., 303 Crear Leslie Building. Kansas City Testing Laboratory, 700 Baltimore Avenue.	<i>See Chicago.</i> 100c, 110c, 120c, 150ca, 160c, 170cb, 410p, 470cp, 500c, 510cp, 530cp, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660c, 680c, 690c, 800c, 810cb, 820c, 830c, 840c, 850c, 870c, 880cb, 890c.
Wilson & Ward (Inc.)-----	<i>See Chicago.</i>
ST. LOUIS: Regis Chauvenet & Bro., 620 Chestnut Street. Gulick-Henderson Co. (Inc.), 5552 Hebert Street. Robert W. Hunt Co., 1403 Syndicate Trust Building. Laclede-Christy Clay Products Co., 1673 Railway Exchange Building. St. Louis Sampling and Testing Works (Inc.), 211 South Seventh Street.	500c (coal), 510c, 520c, 530h, 570c, 590c, 600c, 620c, 640c, 650c, 660c, 680c, 690c, 840c (paints), 880c, 890c. <i>See New York.</i>
H. E. Wiedemann, industrial chemist, Chemical Building.	<i>See Chicago.</i>
Wilson & Ward (Inc.)-----	530cp.
WEBB CITY: Waring & Williams Laboratories..	020c, 040c, 100ca, 110ca, 120ca, 130ca, 140ca, 150ca, 160ca, 170ca, 200c, 210c, 280c, 300c, 360c, 370c, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 820c, 830c, 840c, 850c, 870c, 880c, 890c. 020c, 030c, 060c, 090c, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 250c, 260c, 290c, 470c, 500c, 510c, 520c, 530c, 540c, 570c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c. <i>See Chicago.</i> <i>See Joplin, Mo.</i>

NEBRASKA

LINCOLN: Western Laboratories, 132 North Twelfth Street.	500cps, 510c.
OMAHA: The Omaha Testing Laboratories (Inc.), 1916 Farnam Street.	010c, 020c, 040cp, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500cp, 510cp, 530cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 800c, 840c, 850c, 870c, 880c, 890c.

NEVADA

CARSON CITY: Nevada State Department of Highways.	500p, 510p, 600cp.
GOLDFIELD: Downer Bros., 418 North Columbia Street.	600c, 610c, 660c.
LOVELOCK: A. H. Scott Assay Office, P. O. Box 777.	500c, 510c, 530c, 540c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 850c, 860c, 880c, 890c.

NEW HAMPSHIRE

CONCORD: New Hampshire Highway Testing Laboratory.	500cp, 510cp, 840c.
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NEW JERSEY

BELLEVILLE: Frederick J. Maywald, 1 William Street.	020cb, 140cp, 150cp, 170cp, 200c, 210c, 220c, 230c, 260c, 280ca, 300ca, 310ca, 320ca, 330cp, 360cp, 400cps, 470cps, 480c (paste), 500cp, 520cp, 530cp, 540cp, 570cp, 590cp, 800cs, 840cs, 860ci, 870ci, 970s, 980s (brushes).
CAMDEN: Charles E. Mullin, Third and Jackson Streets.	230c, 330ca, 310ca, 320ca, 330ca, 340ca, 360ca, 370ca, 390ca, 560cpa, 800c, 820cp, 870c, 890c.
DOVER: Dover Laboratory, 53 East McFarlan Street.	500cp, 510cp, 530cp, 570cp, 600c, 660c, 690c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW JERSEY—Continued

Name and address of laboratories	Commodities and nature of tests ¹
HOBOKEN: United States Testing Co. (Inc.) (branches at New York; Philadelphia; Paterson; New Bedford, Mass.; Shanghai, China).	020cb, 040c, 060c, 140c, 150c, 160c, 170c, 200c, 210c, 230c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470cpa, 480cpa, 490cpa, 500c, 510c, 530c, 540c, 570c, 800c, 810c, 820c, 830c, 840c, 870c, 880c, 890c.
LODI: Sal. Chas. Lascari, P. O. Box 5-----	300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c.
NEWARK: The Blair Laboratory-----	060cp, 230c.
The Gray Industrial Laboratories, 961 Frelinghuysen Avenue.	040c, 140c, 500cp.
J. W. Howard Laboratory, 234 Mount Prospect Avenue.	500cp (tars), 510cp, 530cp.
PATERSON: United States Testing Co.-----	See Hoboken.
ROCKAWAY: Container Testing Laboratories (Inc.), Pine and Stickle Streets.	090p (glue), 280p, 300p, 320p, 330p, 410p, 420p, 470p, 490p (boxes), 610p, 640p, 680p, 690p (cans), 950ps.
SOUTH ORANGE: Philip O. Gravelle, 114 Pros- pect Street.	060a, 150a, 200a, 300a, 310a, 320a, 330a, 340a, 360a, 370a, 390a, 400a, 470a, 510a, 530a, 540a, 550a, 570a, 600a, 610a, 620a, 630a, 640a, 650a, 680a, 690a, 840a, 870a.
WATCHUNG: Dr. Richard Moldenke-----	600p, 610p.

NEW MEXICO

LAS CRUCES: New Mexico State Highway Department, Bureau of Materials.	500p (asphalt), 510p, 530p, 600p, 610p, 680cm (gal- vanized sheet metal).
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NEW YORK

ALBANY: Touceda Laboratories, 943 Broadway--	040ci, 140c, 200c, 210c, 280c, 310pa, 320pa, 330pa, 340pa, 360pa, 390pa, 410p, 470p, 490p, 500pc, 520c, 530c, 540c, 550c, 570c, 590c, 600ca, 610ca, 620ca, 630ca, 640ca, 650ca, 680ca, 690ca, 840c, 850c, 870c, 880c.
BUFFALO: The A. W. Hoppenstedt Laboratory (Inc.), 52 West Chippewa Street.	040c, 050cp, 060cp, 140c, 230c, 500c.
Charles C. Kawin Co., 110 Pearl Street-----	See Chicago.
Pittsburgh Testing Laboratory-----	See Pittsburgh.
DOUGLSTON: Douglaston Laboratories (Inc.)--	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
LONG ISLAND CITY: Ira I. Slomon, 117 Thomp- son Avenue.	200cp (rubber).
NEW YORK CITY: Dr. Clement S. Brainin, 505 Fifth Avenue----	660mp, 690s.
Bull & Roberts, 50 West Street-----	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 840c, 880c.
James Chittick, consulting textile specialist, 45 East Seventeenth Street.	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp.
James W. Cox, jr., 320 Broadway-----	300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa.
Dorr Co., 247 Park Avenue-----	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Ekroth Laboratories (Inc.), 461 Eighth Avenue.	010cb, 020cb, 030cb, 040cbp, 060cp, 070cp, 090cpb, 100cpb, 110cpb, 120cpb, 130cpb, 140cpb, 150cpb, 160cpb, 170cpb, 200cp, 210cp, 220cp, 230cp, 240cp, 260cb, 280cp, 290cpb, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 420cp, 470cp, 490cp, 500cp, 510cp, 520cp, 530cp, 540cp, 550c, 560c, 570c, 590cp, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800cp, 810cb, 820c, 830c, 840cp, 850cb, 870cpb, 880cb, 890cpb, 910cp, 950cpb, 970c, 980cp.
Electrical Testing Laboratories, Eightieth Street and East End Avenue.	040c, 060cp, 140c, 200cp, 230c, 300cp, 310cp, 320cp, 330cp, 390cp, 410p, 470p, 500c, 510cp, 520cp, 530cp, 540cp, 600cpm, 610cpm, 620cp, 630cp, 640cp, 650cp, 660cp, 670cp, 680cp, 690cp, 700s, 710s, 720s, 760s, 780s, 790s, 800c, 820c, 830c, 840c, 880c, 910s, 930s, 970s, 990s.
Fraser Laboratories, 50 East Forty-first Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500chl, 810c.
Dr. William M. Grosvenor, consulting chemist and factory engineer, 50 East Forty-first Street.	230c, 280cp, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470cps, 490cps, 810c, 820c, 830c, 890c.

¹ See pp. 1 and 2

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW YORK—Continued

Name and address of laboratories	Commodities and nature of tests ¹
NEW YORK CITY—Continued.	
Gulick-Henderson Co. (Inc.), 145 West Thirty-sixth Street (branches at Pittsburgh, Chicago, St. Louis, Montreal).	140cp, 150c, 160c, 170c, 400i, 500cp, 510cp, 520cp, 530cp, 540c, 550c, 560c, 570c, 590c, 600cp, 620c, 630c, 640cp, 650c, 660c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
The Hospital Supply Co. and The Watters Laboratories, 155 East Twenty-third Street.	610p (aseptic steel furniture), 910p (sterilizers and hospital furniture).
Robert W. Hunt Co., 53 Park Place-----	See Chicago.
Kraus Research Laboratories (Inc.), 110 West Fortieth Street.	510cp, 530cp.
R. H. Laverie & Sons (Inc.), 17 State Street (laboratories at Chicago, Pittsburgh) (offices at Baltimore, Birmingham, Boston, Cleveland, Los Angeles, New Orleans, St. Louis, Seattle).	000t, 010t, 020cb, 030t, 040c, 090c, 100cab, 110cab, 120cb, 130cb, 140ca, 150ca, 160ca, 170cab, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600c, 610c, 630c, 640c, 650c, 680c, 820c, 840c, 850c, 870cb, 880c, 890c.
Ledoux & Co., 99 John Street-----	500c, 530c, 540c, 550c, 570c, 590c, 600ca, 610ca, 620ca, 630ca, 640ca, 650ca, 660ca, 680ca, 690ca. 710s, 910s.
J. H. Morecroft, One hundred and seventh Street and Broadway.	040c, 100c, 110c, 140c, 150c, 160c, 210c, 240c, 820c, 840c, 850c, 870c. 160ca.
New York Produce Exchange, 2 Broadway--	040cp, 140cp, 150cp, 170cp, 200cp, 210c, 220c, 260c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 410p, 470cpa, 490cpa (pulp), 500c, 510cp, 520cp, 530cp, 540c, 550c, 560c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 700s, 710s, 800cp, 810c, 820c, 840c, 860c, 870c, 880c, 930cp, 970cp.
New York Sugar Trade Laboratory, 80 South Street (for members only).	020cb, 040cp, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 260c, 500cp, 570c, 590c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c.
New York Testing Laboratories, 80 Washington Street.	500c, 510c, 530c, 570c, 600cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 810c, 820c, 830c, 840c, 850c, 990cs (buttons). See Pittsburgh.
Pease Laboratories, 39 West Thirty-eighth Street.	060ep, 230c.
Lucius Pitkin (Inc.), 47 Fulton Street-----	200x, 500x, 510x, 530x, 540x, 550x, 560x, 570x, 590x, 600x, 610x, 620x, 630x, 640x, 650x, 680x, 690x, 820x, 830x, 890x. 020cb, 040cp, 100c, 110c, 150cp, 160c, 170cb, 810cb, 820c, 870c.
Pittsburgh Testing Laboratory, 35 Sixth Avenue.	300p, 310p, 320p, 330p, 340p, 360p, 370p, 390p, 490pc, 500pc, 610p, 760s, 780s, 790s, 840pc, 910p. 370cp.
The Reed Laboratories, 22 East Sixteenth Street.	370p.
Dr. Ancel St. John, consulting physicist, 505 Fifth Avenue, room 501.	See Los Angeles.
Schwarz Laboratories (Inc.), 113 Hudson Street.	020cb, 040cb, 100c, 110c, 140c, 150c, 160c, 170c, 200cp, 210c, 220c, 230c, 240c, 260c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500cp, 510cp, 530c, 540c, 570c, 590c, 600cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 800cs, 810cs, 820cs, 830cs, 840cs, 870cs, 880cs, 890cs.
Sheldon, Hilberry & Grisewood (Inc.), 50 Church Street.	470c.
Silk Grading Laboratory (Inc.), 381 Fourth Avenue.	See Hoboken.
The Silk Laboratory, 95 Madison Avenue--	See Los Angeles.
Smith-Emery Co-----	See Chicago.
Stillman & Van Sicken Chemical Laboratory Co. (Inc.), 227 Front Street.	600pm, 610pm (enameled ware), 620pm, 630pm, 640pm, 650pm, 660pm, 680pm, 690pm. 530h (refractories).
Stillwell & Gladding, 80 West Street-----	
United States Testing Co. (Inc.), 316 Hudson Street.	
Western Precipitation Co., 25 West Forty-third Street.	
Wilson & Ward (Inc.)-----	
NIAGARA FALLS:	
George F. Comstock, 967 Harrison Avenue--	
The FitzGerald Laboratories-----	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NORTH CAROLINA

Name and address of laboratories	Commodities and nature of tests ¹
WILMINGTON: Law & Co., 204 North Front Street (branch at Atlanta).	010c, 020c, 030c, 040c, 100c, 120c, 130c, 140c, 150c, 160c, 170c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 820c, 830c, 850c, 880c, 890c.

OHIO

CANTON: United Alloy Steel Corporation-----	600c.
CINCINNATI:	
Robert J. Anderson (Inc.), 2416 Beckman Street.	500cp, 510cp, 530cp, 540cp, 570cp, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm.
F. C. Broeman & Co., 215 East Fourth Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
The Consulting Co., Union Central Tower.	200cp, 210cp, 500cp (asphalt and mineral wax), 540cp (asbestos), 570cp, 840cp (pigments).
Robert W. Hunt Co., 509 Gerke Building--	See Chicago.
Charles C. Kawin Co., 222 West Fourth Street.	See Chicago.
CLEVELAND:	
Cremer-Case Co., 2800 Washington Street NW.	500c, 600c, 610c.
Crowell & Murray, 407 Perry-Payne Building.	500c, 510cp, 520c, 530c, 540c, 550c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm.
R. H. Danforth, engineering consultant, Case School of Applied Science.	300p (rope).
Forest City Testing Laboratory Co., 507 Superior Building.	010c, 020c, 040c, 060c, 090c, 100c, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 290c, 500c, 510cp, 530cp, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Gas Appliance Testing Laboratory, foot of East Sixty-second Street.	990s (gas appliances).
The James H. Herron Co., 1360 West Third Street.	300cp, 310cp, 320cp, 330cp, 410i, 500c, 510cp, 530cp, 540c, 570c, 590c, 600cpm, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 800c, 820c, 830c, 840c, 880c, 950p.
Robert W. Hunt Co., 636 Engineers Building.	See Chicago.
Pittsburgh Testing Laboratory-----	See Pittsburgh.
Textor Chemical Laboratories, 1165 West Sixth Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 660cm, 680cm, 690cm, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Wilson & Ward (Inc.)-----	See Chicago.
COLUMBUS:	
Charles F. Long, 141 East Broad Street----	500 ch, 800c.
Ellis Lovejoy, 1538 North High Street----	530s.
Willard Richardson, Schultz Building-----	530chp.
LANCASTER: The Sharp-Shurtz Co., glass chemists and consulting engineers.	520cp.
MANSFIELD: A. A. Grubb, 67 Parkwood Boulevard.	510s (core sand, molding sand, core binder).

OKLAHOMA

CARDIN: Waring & Williams Laboratories-----	See Joplin, Mo.
PICHER: Waring & Williams Laboratories-----	See Joplin, Mo.

OREGON

PORTLAND:	
City Health Laboratory, City Hall-----	010i, 020cb, 030i.
Robert W. Hunt Co., 720 Corbett Building.	See Chicago.
I. F. Laucks (Inc.), 310 Wilcox Building----	See Seattle.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

OREGON—Continued

Name and address of laboratories	Commodities and nature of tests ¹
PORTLAND—Continued. E. W. Lazell, 537 Railway Exchange Building.	404c, 100cs, 110c, 130c, 140c, 150c, 160c, 170c, 200cp, 210c, 220c, 230c, 280cpa, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 470cpa, 500cp, 510cp, 520c, 530c, 540c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 800c, 810cb, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Northwest Testing Laboratories----- Oregon Independent Testing Laboratory, Third and Yamhall Streets.	See Seattle. 010c, 020c, 030c, 040c, 050c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500h, 840c, 880c.
SALEM: Oregon State Highway Testing Laboratory, 1260 State Street.	500pc (petroleum asphalt), 510pc, 800cps, 840c, 890cps.

PENNSYLVANIA

ALLENTOWN: Allentown Testing Laboratory, 373 Linden Street.	170c, 410p, 500c, 510cp, 530cp, 600cp, 620cp, 810c.
CRESSON: Warner Laboratories, 617 First Street.	140c, 200cp, 500cp (asphalt), 510cp, 530cp, 540cp (asbestos), 570c (magnesia), 640c, 650c, 680c, 690c (solder), 700s (packing), 840c.
EASTON: Pittsburgh Testing Laboratory-----	See Pittsburgh.
ERIE: The Erie Laboratory, 1519 French Street.	500hl, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
HARRISBURG: Andrew S. McCreath & Son, 236 Liberty Street.	500ch, 510c, 530c, 600c, 620c, 690c.
MALVERN: J. Bishop & Co. Platinum Works---	660c.
NORTHAMPTON: Froehling & Robertson (Inc.)-	See Richmond.
PHILADELPHIA:	
Booth, Garret & Blair, 404-406 Locust Street.	500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
The Chemical Service Laboratories (Inc.), southeast corner Eighteenth and Cherry Streets.	500c, 530c, 690c (solder and other nonferrous alloys), 800c.
W. B. Coleman & Co., Fifteenth and Wallace Streets.	500c, 510cp, 530cp, 540c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 850c, 880c.
E. L. Conwell & Co., 2024 Arch Street----	140c, 150c, 160c, 170c, 410p, 470p, 500cp, 510cp, 520cp, 530cp, 540cp, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650c, 660cp, 680cp, 690cp, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
George C. Davis, 636 Race Street-----	600c, 610c, 620c, 630c, 640c, 650c, 680c, 960c.
J. Atlee Dean, 614 South Forty-eighth Street.	000cb, 010cb, 020cb, 030cb, 040cb, 060c, 140cba, 150cb, 160c, 170c, 220c, 300ca, 360ca, 370ca, 470ca, 500c, 510c, 530c, 570c, 590c, 600c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c.
E. F. Houghton & Co., 240 West Somerset Street (branch at Chicago).	040cp, 050cp, 060cp, 140c, 500c.
Robert W. Hunt Co., 40 Transportation Building.	See Chicago.
Horace C. Knerr, consulting metallurgical engineer, 538 East Washington Lane.	600pm, 610pm, 630pm, 640pm, 690pm.
James V. McCrae, 3218 Rhawn Street, Holmesburg.	500h, 510c, 530c, 540c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
Tinius Olsen Testing Machine Co., 500 North Twelfth Street.	410p, 510p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p.
Pittsburgh Testing Laboratory-----	See Pittsburgh.
Riehle Bros. Testing Machine Co., 1424 North Ninth Street.	060p, 200p, 310p, 320p, 330p, 360p, 370p, 390p, 510p, 520p, 530p, 600p, 610p, 620p, 630p, 640p, 650p, 680p.
Samuel P. Sadtler & Son (Inc.), 210 South Thirteenth Street.	040c, 050cb, 060c, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 470ca, 490ca, 500cp, 510c, 520c, 530c, 540c, 570c, 590c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Smith, Rudy & Co., 411 Walnut Street----	500ch, 530c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
United States Testing Co-----	See Hoboken.
Wilson & Ward-----	See Chicago.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

PENNSYLVANIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
PITTSBURGH:	
Gulick-Henderson Co. (Inc.), 524 Fourth Avenue.	<i>See</i> New York.
Robert W. Hunt Co., 400 Monongahela Bank Building.	<i>See</i> Chicago.
R. H. Laverie & Sons (Inc.)-----	<i>See</i> New York.
Pittsburgh Testing Laboratory, Stevenson Street at Locust (branches at Buffalo; New York City; Universal, Pa.; Easton; Philadelphia; P i t t s b u r g h; Miami; Tampa; Birmingham; Ragland, Ala.; Leeds, Ala.; Richard City, Tenn.; Kingsport, Tenn.; Dallas; Chicago; Detroit; Cleveland; Houston).	020c, 040cp, 060p, 090c, 110c, 140c, 150c, 160c, 170c, 200cp, 300pc, 310p, 320p, 330p, 340p, 360pc, 370p, 390p, 400p, 410p, 420p, 430p, 470p, 480p, 490p, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 670p, 680cp, 690cp, 700ps, 710ps, 720ps, 730ps, 740ps, 750ps, 760ps, 770ps, 780ps, 790ps, 800cp, 820cp, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910cp, 950c, 970c, 980p, 990cp.
Smith-Emery Co.-----	<i>See</i> Los Angeles.
Wilson & Ward (Inc.)-----	<i>See</i> Chicago.
UNIVERSAL: Pittsburgh Testing Laboratory----	<i>See</i> Pittsburgh.

RHODE ISLAND

NEWPORT: The Eppley Laboratory, 12 Sheffield Avenue.	710s (thermocouples, thermopiles, standard cells).
PROVIDENCE:	
Saunders & Franklin, 184 Whittier Avenue.	040c, 140c, 500c, 600cm, 620c, 630c, 640c, 650c, 680c, 690c, 870c.
Textile Mill Service, 95 Fountain Street----	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp.

TENNESSEE

CHATTANOOGA:	
Atlanta Paving Laboratories-----	<i>See</i> Atlanta.
Froehling & Robertson (Inc.)-----	<i>See</i> Richmond.
KINGSFORT:	
Froehling & Robertson (Inc.)-----	<i>See</i> Richmond.
Pittsburgh Testing Laboratory-----	<i>See</i> Pittsburgh.
MEMPHIS: Barrow-Agee Laboratories (Inc.), 60 North Third Street (branches at Shreveport, La.; Jackson, Miss.; Little Rock, Ark.).	010cp, 020cp, 040cp, 090cp, 100c, 110c, 140cp, 150c, 160c, 170c, 220c, 240b, 280cp, 290cp, 500cp, 510cp, 520cp, 530cp, 540cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800cp, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
NASHVILLE: Froehling & Robertson (Inc.)-----	<i>See</i> Richmond.
RICHARD CITY: Pittsburgh Testing Laboratory-----	<i>See</i> Pittsburgh.

TEXAS

DALLAS:	
Robert W. Hunt Co., 1213 Kirby Building----	<i>See</i> Chicago.
Landon C. Moore, 1713½ Young Street----	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 850c, 880c, 890c.
Pittsburgh Testing Laboratory, Santa Fe Building.	<i>See</i> Pittsburgh.
Southwestern Laboratories, 1312½ Main Street.	<i>See</i> Fort Worth.
EL PASO: George W. Cameron, 205 San Francisco Street.	510c, 530c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
FORT WORTH:	
Fort Worth Laboratories, 828½ Monroe Street.	<i>See</i> Southwestern Laboratories.
Southwestern Laboratories, 828½ Monroe Street (branches at Dallas, Houston).	010c, 020c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 240c, 290c, 300c, 310c, 360c, 390c, 400c, 410c, 500c, 510c, 520c, 530c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

TEXAS—Continued

Name and address of laboratories	Commodities and nature of tests ¹
GALVESTON: Felix Poquin, chemist, 305½ Twenty-second Street.	000b, 010bc, 020bc, 030bc, 040bc, 100c, 110c, 120c, 130c, 140c, 150cb, 160cp, 170c, 220c, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 470c (pulp), 500cp, 510cp, 530cp, 570cp, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 820c, 840c, 850c, 870c, 880c.
HOUSTON: Houston Laboratories, 215½ Main Street-- Pittsburgh Testing Laboratory----- Southwestern Laboratories, 215½ Main Street.	140c, 500c, 510c, 640c, 660c, 680c, 850c, 880c. <i>See</i> Pittsburgh. <i>See</i> Fort Worth.

UTAH

SALT LAKE CITY: Alonzo F. Bardwell, 158 Southwest Temple Street. Black & Deason, 165 Southwest Temple Street. C. S. Cowan, 160 Southwest Temple Street. Crismon & Nichol, 229 Southwest Temple Street. Utah State Road Commission, Capitol Building.	640c, 650c, 660c, 680c, 690c. 500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c. 500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c. 500c (coal), 530c, 570c, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c. 500cps, 510cps, 600p (reinforcing steel), 800cps, 840cs.
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VIRGINIA

FORDWICK: Froehling & Robertson (Inc.)----- NORFOLK: Froehling & Robertson (Inc.)----- RICHMOND: Froehling & Robertson (Inc.), 814 West Cary Street (branches at Atlanta; Northampton, Pa.; Union Bridge, Md.; Nor- folk; Fordwick; Kingsport, Tenn.; Chatta- nooga; Nashville; Birmingham; Ragland, Ala.).	<i>See</i> Richmond. <i>See</i> Richmond. 040c, 110c, 140c, 500c, 510cpi, 520cp, 530cp, 540cp, 570c, 590c, 600cpi, 630c, 640c, 650c, 680c, 690c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
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WASHINGTON

SEATTLE: Falkenburg & Co., 116 Yesler Way----- Geijsbeek Engineering Co., 912 Arctic Building. Robert W. Hunt Co., 621 Lyon Building-- I. F. Laucks (Inc.), 314 Maritime Build- ing (branches at Tacoma, Portland, Vancouver (349 Railway Street), Tsing- tao (P. O. Box 123), China). Northwest Testing Laboratories, 2113 Third Avenue (branches at Tacoma, Portland). Pacific Coast Testing Laboratory, 502 Lyon Building. Smith-Emery Co.----- SPOKANE: The C. M. Fassett Co. (Inc.), 207 North Wall Street.	020c, 040c, 110c, 140c, 150c, 160c, 170c, 280c, 400c (creo- soted), 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c. 500c, 530c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c. <i>See</i> Chicago. 010c, 020c, 030c, 040c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 220c, 230c, 280c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 470c, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c. 010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 500c, 510c, 530c, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800hl, 840c, 850c, 880c. 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 840c, 850c. <i>See</i> Los Angeles. 500ch, 510cp, 530cp, 550c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 840c, 870c, 880c, 910s (laboratory apparatus), 970c.
TACOMA: Bennett's Chemical Laboratory, 1142 Mar- ket Street. I. F. Laucks (Inc.), 712 Tacoma Building-- Northwest Testing Laboratories, City Hall Annex.	040c, 110c, 140c, 500c, 510c, 530cp, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 680cm, 690cmi (copper ores, matte blister copper), 800c, 850c. <i>See</i> Seattle. <i>See</i> Seattle.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

WEST VIRGINIA

Name and address of laboratories	Commodities and nature of tests ¹
CHARLESTON: Commercial Testing & Engineering Co., P. O. Box 832.	<i>See</i> Chicago.

WISCONSIN

MADISON: Wilbur L. Jones, 204 Democrat Building--- Wisconsin Highway Commission, Capitol Annex. MILWAUKEE: Sommer Chemical Laboratories. 114 Grand Avenue.	020p(casein glue), 090(glue)pc, 280cp, 930cp(adhesives), 510p, 600p, 840cp. 010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 880c.
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WYOMING

CHEYENNE: Wyoming State Highway Department, Capitol Buiding.	400cp, 410cp, 500cp, 510cp, 530cp, 600cpm, 610cpm, 620cpm, 690cpm, 800cs, 840cs.
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¹ See pp. 1 and 2.

COLLEGE RESEARCH LABORATORIES

It has seemed desirable to supplement the list of commercial testing laboratories with a list of the laboratories in colleges. These laboratories are used not only for purposes of instruction, but also to a considerable extent for research work. In fact, many important industrial research problems are being solved in the college laboratories.

The inclusion of a college laboratory in the accompanying list is to be interpreted merely as showing that the laboratory is equipped to test the types of commodities indicated for research and instructional purposes.

In almost all of the college laboratories a certain amount of commodity acceptance testing is being done on either a commercial basis or for the purchasers of the States, municipalities, public institutions, or the colleges themselves. However, there is a very wide diversity in the methods of conducting such work with special reference to the responsibility of the colleges for the tests made in the laboratories.

It is suggested that public purchasers and other persons interested in ascertaining whether or not commodity acceptance testing will be undertaken by certain colleges, and the conditions under which such testing will be carried on, communicate directly with the proper officers of the colleges or with the individuals in charge of the laboratories.

In the accompanying list the laboratories have been arranged alphabetically in accordance with the geographical location of the colleges. Explanations of the symbolic references to the types of commodities that can be tested and the nature of the tests made are given on pages 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES

ALABAMA

Location and name of laboratory	Commodities and nature of tests ¹
AUBURN: Alabama Polytechnic Institute..... Civil engineering laboratory, J. A. C. Callan. Electrical laboratory, W. W. Hill. Mechanical laboratory, C. R. Hixon. Chemical laboratory. Physics laboratory. UNIVERSITY: University of Alabama..... Chemical laboratory, S. J. Lloyd. Mining laboratory, J. R. Cudworth. Physical laboratory, F. R. Maxwell.	410p, 500ch, 510p, 600pc, 610pc, 700s, 710s, 760s, 820c, 830c.

ARIZONA

TUCSON: University of Arizona..... Chemistry laboratory, Ernest Anderson. Agricultural chemistry laboratory, Paul S. Burgess. Physics laboratory, Frank M. Life. Electrical engineering laboratory, James C. Clark. Mining engineering and metallurgical laboratory, Marke Ehle. Civil engineering laboratory, Frank C. Kelton. Mechanical engineering laboratory, L. D. Darrow.	510p, 710s.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

ARKANSAS

Location and name of laboratory	Commodities and nature of tests ¹
FAYETTEVILLE: University of Arkansas..... Bacteriology laboratory, William L. Bleecker. Engineering experiment station laboratory, Harrison Hale. Agronomy laboratory, Martin Nelson.	020b, 100cb, 240cb, 500h, 510cp, 880b.

CALIFORNIA

BERKELEY: University of California..... Dairy industry laboratory, C. L. Roadhouse. Agricultural engineering laboratory, L. J. Fletcher. Animal husbandry laboratory, G. L. Hart. Civil engineering laboratory, R. E. Davis. Mechanical and electrical engineering laboratory, B. F. Raber. Mining laboratory, Frank H. Probert.	020c, 110c, 360cp, 410p, 500cp, 510p, 530p, 560i, 570c, 600 cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660c, 680cp, 690cp, 700s, 710s, 730s, 750s, 760s.
LOS ANGELES: University of Southern California..... Electrical and mechanical engineering laboratory, P. S. Biegler.	700s, 710s, 730s, 910s.
PASADENA: California Institute of Technology..... Norman bridge laboratory of physics, R. A. Millikan. Gates chemical laboratory, Arthur A. Noyes. Electrical engineering laboratory, R. W. Sorenson. Engineering research laboratory, C. C. Thomas. Mechanical engineering laboratory, R. L. Daugherty.	410p, 500cp, 510cp, 520cp, 530cp, 550cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 700s, 710s, 750s.
STANFORD UNIVERSITY: Stanford University..... Mechanical engineering laboratory, W. F. Durand. Civil engineering laboratory, C. B. Wing. Electrical engineering laboratory, H. J. Ryan. Chemical engineering laboratory, R. E. Swain. Metallurgical laboratory, T. J. Hoover. Aerodynamics laboratory, W. F. Durand.	410p, 510p, 530p, 550cm, 560cm, 570cm, 590cm, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 700s, 710s, 750s, 830c, 890c, 910s.

COLORADO

BOULDER: University of Colorado..... Materials testing laboratory, H. J. Gilkey. Concrete laboratory, H. J. Gilkey. Meter testing laboratory, C. M. McCormick. Electrical laboratory, F. A. Euston. Oil laboratory, J. A. Hunter. Steam laboratory, S. T. Simmering. Sanitary chemistry laboratory, C. F. Poe. Physical chemistry laboratory, Frank E. German. Organic chemistry laboratory, P. M. Dean.	010c, 020c, 040cp, 100c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 400p, 410p, 500cp, 510cp, 530cp, 540cp, 550cp, 590cp, 600p, 610p, 640p, 700s, 710s, 740s, 750s, 790s, 800c, 810c, 830c, 840cp, 870cp, 880cp, 890c.
COLORADO SPRINGS: Colorado College..... Biology laboratory, Ralph J. Gilmore. Chemistry laboratory, Frank W. Douglas. Geology laboratory, I. Allen Keyte. Physics laboratory, Paul E. Boucher. Psychology laboratory, John A. Glaze.	100c, 110c, 120c, 140c, 160c, 170c, 200c, 500ch, 510cp, 530cp, 600cp, 610cp, 620c, 640c, 650c, 660c, 690c, 710p, 800c, 840c, 910p.
FORT COLLINS: Colorado State Agricultural College..... Experimental and chemistry laboratory, William P. Hedden. Student chemistry laboratory, G. H. Whiteford. Physics laboratory, Fred G. Person. Soils laboratory, Alvin Kezer. Dairy laboratory, George E. Morton. Veterinary laboratory, George H. Glover. Pathology laboratory, I. E. Newson. Bacteriology laboratory, Walter G. Sackett.	010cb, 020cb, 100c, 240c, 250i, 400p, 410p, 510p, 530p, 570p, 600cp, 700s, 710s, 720s, 730s, 740s, 800c, 810c, 830c, 850c, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

COLORADO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
GOLDEN:	
Colorado School of Mines.....	500c, 510p, 530cp, 550c, 570c, 590c,
Chemical laboratory, R. A. Baxter.	600cp, 630c, 640c, 650c, 680c, 690c,
Experimental plant laboratory, A. J. Ming.	850c, 880c, 890cp.
Clay laboratory, W. P. Huleatt.	
YELLOW SPRINGS:	
Antioch College.....	010ab, 020ab, 030ab, 100c, 110c, 140c,
Physics laboratory, John G. Frayre.	150c, 170c, 500ac, 510ac, 530ac, 570ac,
Biology laboratory, O. L. Inman.	590ac, 600acm, 620acm, 630acm,
Chemistry laboratory, C. S. Adams.	640acm, 650acm, 660acm, 680acm,
Geology laboratory, A. C. Swinnerton.	690acm, 710s.
Bacteriology laboratory, H. A. Hoffman.	

CONNECTICUT

MIDDLETOWN:	
State Trade School.....	300p, 310p, 320p, 330p, 340p, 360p,
Textile laboratory, Samuel Bridge.	370p, 390p.
NEW HAVEN:	
Sheffield Scientific School of Yale University.....	370cp, 410p, 510p, 530p, 550cp, 600pm,
Sterling chemistry laboratory, H. A. Curtis.	610pm, 620pm, 630pm, 640pm,
Mason mechanical laboratory, S. W. Dudley.	650pm, 680pm, 690pm, 710s, 720s,
Dunham electrical laboratory, C. F. Scott.	800c, 820c, 830c, 880c, 890c, 910s.
Engineering mechanics laboratory, C. J. Tilden.	
Sloane physics laboratory, John Zeleny.	
Hammond mining and metallurgy laboratory, C. H. Mathewson.	

DELAWARE

NEWARK:	
University of Delaware.....	020cb, 500p, 510p, 530p, 600c, 610c,
Physics laboratory, G. P. Paine.	700s, 710s, 760s, 800c, 820c, 830c,
Civil engineering laboratory, H. K. Preston.	850c, 890c.
Chemistry laboratory, A. E. Eastman.	
Mechanical laboratory, M. V. G. Smith.	
Agricultural experiment station, C. C. McCue.	
Bacteriology laboratory, C. C. Palmer.	
Horticultural laboratory, L. R. Detzen.	
Agronomy laboratory, G. L. Schuster.	
Agricultural chemistry laboratory, P. B. Myers.	

DISTRICT OF COLUMBIA

WASHINGTON:	
Catholic University of America.....	500ch, 510p, 600cp, 610cp, 800c, 910s.
Civil engineering laboratory, A. J. Scullen.	
Geological and mining laboratory, Fred L. Serviss.	
Mechanical laboratory, L. H. Crook.	
Electrical laboratory, T. J. MacKannagh.	
Chemical laboratory, H. Chambliss.	
George Washington University.....	410p, 500p, 510p, 600p, 610p, 700s,
Radio-electricity laboratory, Louis Cohen.	710s, 820c, 830c, 880cb.
Chemistry laboratory, H. C. McNeil.	
Civil engineering laboratory, Hugh Miller.	
Physics laboratory, T. B. Brown.	
Bacteriology laboratory, O. B. Hunter.	
Mechanical laboratory, J. H. Platt.	
Electrical laboratory, N. B. Ames.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

FLORIDA

Location and name of laboratory	Commodities and nature of tests ¹
DELAND: John B. Stetson University..... Mechanical laboratory, D. E. Davis. Electrical laboratory, R. E. Heffner. Civil engineering laboratory, E. P. Barrell. Chemical laboratory. Physics laboratory.	500ch, 510p, 600cp, 610cp, 700s, 710s.
GAINESVILLE: University of Florida..... Physics laboratory, W. S. Perry. Chemistry laboratory, F. H. Heath. Mechanical engineering laboratory, A. J. Strong. Electrical engineering laboratory, J. Weil.	040psac, 060psc, 100ac, 110ac, 140acs, 150ac, 170ac, 200ac, 280ac, 290ac, 300ac, 330ac, 340hpsac, 360hpsac, 370hpsac, 390hpsac, 400hps, 410hps, 470ac, 500hpsac, 510hpsac, 520ac, 530hpsac, 540ac, 550ac, 560ac, 570ac, 590ac, 600psac, 610pasc, 620ac, 630pasc, 640psac, 650ac, 660ac, 680psac, 690ac, 700hps, 710is, 740p, 780is, 790ip, 800acs, 820ac, 830ac, 840acs, 850ac, 860ac, 870ac, 880ac, 890ac, 910is, 970acs, 990acs.

GEORGIA

ATHENS: University of Georgia..... Electrical laboratory, U. H. Davenport. Civil engineering laboratory, C. M. Strahan. Chemical laboratory. Physics laboratory. Good roads laboratory.	500ch, 510p, 600cp, 610cp, 700s, 710s.
ATLANTA: Georgia School of Technology..... Textile research laboratory, Hibbard S. Busby. Metallography laboratory, Theodore S. Dunn. Civil engineering laboratory, F. C. Snow. Shop laboratory, R. S. King. Electrical engineering laboratory, T. W. Fitzgerald. Ceramic laboratory, A. V. Henry. Chemistry laboratory, G. H. Boggs.	070taips, 230tacips, 300acips, 310acips, 320acips, 330acips, 340acips, 360acips, 370acips, 390acips, 400si, 410si, 500ch, 510p, 520aips, 530ahip, 600am, 620am, 630am, 640am, 650am, 680am, 690am, 700s, 710s, 720s, 760sih, 770s, 790s, 840acips, 910psa.

HAWAII

HONOLULU: University of Hawaii..... Engineering laboratory, A. R. Keller. Physical laboratory, Paul Kirkpatrick. Chemical laboratory, F. T. Dillingham. Dairy laboratory, L. A. Henke.	020c, 420p, 500c, 510p, 600pc, 610pc, 620pc, 630pc, 640pc, 650pc, 690pc, 800c, 820c, 830c, 850c, 880c, 890c.
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IDAHO

MOSCOW: University of Idaho..... Mechanical engineering laboratory, Ivan C. Crawford. Civil engineering laboratory, Ivan C. Crawford. Electrical engineering laboratory, Ivan C. Crawford. Chemical laboratory, Carlon Ende. Agricultural chemistry laboratory, Ray Neidig. Metallurgical laboratory, F. A. Thomson.	400p, 420p, 500p, 510p, 600p, 610p, 620cp, 630c, 640p, 650c, 680c, 710s, 730s, 800c, 810c, 820c, 830c, 840c, 870c, 880c, 890c.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

ILLINOIS

Location and name of laboratory	Commodities and nature of tests ¹
CHICAGO:	
Armour Institute of Technology----- Chemical laboratory, W. J. Bentley. Electrical laboratory, E. H. Freeman. Mechanical laboratory, G. F. Gebhardt. Civil engineering laboratory, M. B. Wells.	040cl, 060p, 100abc, 110abc, 120abc, 130abc, 140abcp, 150ac, 160ac, 170abc, 200acp, 210ac, 220ac, 230ac, 280acp, 300hpac, 320ac, 330hp, 340hp, 360hp, 400p, 410hp, 470hpac, 500plac, 520pac, 530pac, 540ac, 550acp, 570ac, 600pacm, 610pacm, 620pacm, 630pacm, 640pacm, 650ac, 660acm, 680pacm, 690pac, 700p, 710s, 740p, 790p, 800acp, 820ac, 830ac, 840ac, 870ac, 880ac, 910s.
Lewis Institute----- Chemistry laboratory, W. R. Smith. Physics laboratory, F. A. Rogers. University of Chicago----- Kent chemical laboratory, W. A. Noyes, jr. Department of home economics laboratory, Katharine Blunt. Physiological chemistry and pharmacology laboratory, A. L. Tatum and H. C. Koch.	020c, 040c, 140c, 160cp, 300cp, 360cp, 370cp, 600c, 610c, 710s, 810cb, 910s.
EVANSTON:	
Northwestern University----- Chemistry laboratory, Frank C. Whitmore. Physics laboratory, B. J. Spence. Zoology laboratory, F. D. Barker. Botany laboratory, C. B. Atwell. Physiological chemistry laboratory, G. J. Farmer. Geological laboratory, U. S. Grant.	
URBANA:	
University of Illinois----- Engineering experiment station laboratory, M. S. Ketchum. Applied chemistry testing work laboratory, J. M. Lindgren. Ceramic engineering laboratory, C. W. Parmelee. Applied mechanics laboratory, M. L. Enger. Mechanical engineering laboratory, A. C. Willard. Highway engineering laboratory, W. C. Huntington. Electrical engineering laboratory, E. B. Paine.	100c, 110c, 140c, 150c, 160c, 170c, 300cp, 500cp, 510cp, 520cp, 530cp, 540c, 550c, 560c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cp, 680cpm, 690cpm, 700s, 710s, 720s, 790s, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.

INDIANA

LAFAYETTE:	
Purdue University----- Engineering experiment station, A. A. Potter. Agricultural experiment station, Burton W. Scheib. Chemical and physical laboratories, R. B. Moore.	010c, 020c, 040c, 100c, 120c, 140c, 240b, 400p, 410p, 420p, 500pc, 510p, 530c, 550c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680c, 690c, 700s, 710s, 720s, 750s, 760s, 780s, 820c, 850c, 880c, 910s.
NOTRE DAME:	
University of Notre Dame----- Chemistry and chemical engineering laboratories, H. B. Froning. Metallurgical laboratory, E. G. Mahin. Organic research laboratory, J. A. Nienwland. Biology laboratory, F. Wenninger.	020cb, 040cb, 070c, 110c, 140c, 150c, 160c, 170c, 500cph (coal), 510cp, 520cp, 530cp, 600cp, 610cp, 620cp, 640cp, 650cp, 680cp, 690cp, 820c, 830c, 840c, 850c.
TERRE HAUTE:	
Rose Polytechnic Institute----- Civil engineering laboratory, R. E. Hutchins. Physical laboratory, B. A. Howlett. Electrical laboratory, C. C. Knipmeyer. Mechanical laboratory, Carl Wischmeyer. Chemical laboratory, John White. Shops, George W. Greenleaf.	500c, 510cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700s, 710s, 740s, 760s, 790s, 880c, 910s.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

IOWA

Location and name of laboratory	Commodities and nature of tests ¹
AMES:	
Iowa State College.....	000i, 100cb, 110c, 240c, 500c, 510cp,
Agricultural chemistry laboratory, W. G. Gaessler.	530cph, 600cpm, 610cpm, 620cpm,
Chemical engineering laboratory, G. W. Burke.	630cpm, 640cpm, 650cpm, 680cpm,
Veterinary investigations laboratory, Charles Murray.	690cpm, 710s, 720s, 730s, 780s, 800c,
Farm crops laboratory, H. D. Hughes.	820c, 830c, 840c, 850c, 880c, 890c,
Soils laboratory, W. H. Stevenson.	910s.
Engineering experiment station, Anston Marston.	
IOWA CITY:	
State University of Iowa.....	000cp, 010cp, 020cp, 040cp, 050c, 060c,
Analytical chemistry laboratory, Stephen Popoff.	090c, 100c, 110c, 120c, 130c, 140cp,
Biological laboratory, Victor C. Myers.	150c, 160cp, 170c, 410p 500c, 510cp,
Industrial laboratory, H. L. Olin.	520c, 530cp, 540c, 550c, 570c, 590c,
Metallurgical laboratory, N. O. Taylor.	600cp, 610cp, 620c, 630c, 640c, 650c,
Organic chemistry laboratory, L. Charles Raiford.	680c, 690c, 700s, 710s, 750s, 800c,
Physical laboratory, J. N. Pearce.	810c, 820c, 830c, 870c, 880c, 890c.
Sanitary laboratory, Edward Bartow.	
Pharmacy laboratory, Wilber J. Teeter.	
Engineering laboratory, C. C. Williams.	

KANSAS

LAWRENCE:	
University of Kansas.....	010abc, 020abet, 030abc, 040abcp,
Mechanical laboratory, A. H. Sluss.	100abc, 110abc, 120abc, 130abc,
Electrical laboratory, G. C. Shaad.	140abc, 150abc, 160abc, 170abc,
Chemistry laboratory, H. P. Cady.	200abc, 210abc, 220abc, 230abc,
Hydraulics laboratory, F. M. Dawson.	240abc, 250abc, 260abc, 280abc,
Metallurgical laboratory, E. D. Kinney.	290abc, 500achp, 510achp, 520achp,
Highway engineering laboratory, W. C. McNoun.	530achp, 540achp, 550achp, 560achp,
Experimental Engineering Laboratory, P. F. Walker.	570achp, 590achp, 600acm, 610acm,
Bacteriological laboratory, N. P. Sherwood.	620acm, 630acm, 640acm, 650acm,
Civil engineering laboratory, H. A. Rice.	680acm, 690acm, 700i, 710i, 740i,
Railway engineering laboratory, F. A. Russell.	750i, 800ac, 810ac, 820ac, 830ac,
Mining laboratory, C. M. Young.	840ac, 850ac, 860ac, 870ac, 880ac,
State chemical research laboratory, H. C. Allen.	890ac.
State food laboratory, Henry Werner.	
State drug laboratory, L. D. Havenhill.	
Water and sewage laboratory, E. Boyce.	
Entomology laboratory, H. B. Hungerford.	
MANHATTAN:	
Kansas State Agricultural College.....	010c, 020c, 030c, 040c, 100c, 110c, 120c,
Mechanical engineering laboratory, J. P. Calderwood.	130c, 140c, 150c, 160c, 170c, 240bc,
Engineering experiment station, R. A. Seaton.	250b, 280a, 300p, 500p, 510p, 530p,
Civil engineering laboratory, L. E. Conrad.	600p, 700s, 710s, 720s, 730s 740s,
Physics laboratory, J. O. Hamilton.	790s, 840c, 850c.
Electrical laboratory, C. E. Reid.	
Chemistry laboratory, H. H. King.	
Agricultural engineering laboratory, H. B. Walker.	
Seed laboratory, R. I. Throckmorton.	
Botany laboratory, L. E. Melchers.	
Entomology laboratory, George A. Dean.	
Materials testing laboratory, C. H. Scholer.	

KENTUCKY

LEXINGTON:	
University of Kentucky.....	
Agricultural experiment station, Thomas Cooper.	
Chemistry laboratory, F. E. Tuttle.	
Civil engineering laboratory, D. V. Terrell.	
Electrical engineering laboratory, W. E. Freeman.	
Mechanical engineering laboratory, L. S. O'Bannon.	
Mining engineering laboratory, C. S. Crouse.	
LOUISVILLE:	
University of Louisville.....	410p, 510p, 600p, 610p, 700s, 710s, 830c.
Mechanical laboratory, B. M. Brigman.	
Physics laboratory, L. G. Raub.	
Civil engineering laboratory, W. B. Wendt.	
Electrical laboratory, D. C. Jackson, jr.	
Chemical laboratory.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

LOUISIANA

Location and name of laboratory	Commodities and nature of tests ¹
BATON ROUGE: Louisiana State University and Agricultural and Mechanical College Engineering experiment laboratory, T. W. Atkinson. Civil engineering laboratory, F. F. Pillet. Mechanical laboratory, L. J. Lassalle. Chemical laboratories, Messrs. Coates, Fieger, Freas, Horton, Menville, and Stewart.	020c, 040cp, 140c, 150c, 160c, 420c, 470c, 500pc(oils), 530p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 890p, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
NEW ORLEANS: The Tulane University of Louisiana, College of Engineering Experimental engineering laboratory, W. B. Gregory. Electrical engineering laboratory, Douglas Anderson. Industrial chemistry laboratory, C. S. Williamson, jr.	410p, 500c, 510p, 530p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 710s, 800c, 820c, 830c, 840c, 870c, 880c, 890c, 910s.

MAINE

ORONO: University of Maine Maine agricultural experiment station, W. J. Morse. State highway laboratory, E. H. Sprague. Chemistry and chemical engineering laboratory, C. A. Brautlecht. Electrical laboratory, W. E. Barrows. Mechanical laboratory, W. J. Sweetser. Metallographical laboratory, W. J. Sweetser.	020c, 040acp, 060acp, 100acp, 110acp, 140acp, 150acp, 160acp, 170acp, 200acp, 210acp, 300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 400p, 410p, 470acp, 490acp, 500acpm, 510acp, 530acp, 560acp, 570acp, 590acp, 600acpmh, 610acpm, 620acpm, 630acpm, 640acpm, 650acpm, 660acpm, 680acpm, 690acpm, 700s, 710s, 760s, 800acp, 810acp, 820acp, 830acp, 840acp, 850acp, 870acp, 880acp, 890acp, 910acp, 970acp.
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MARYLAND

BALTIMORE: The Johns Hopkins University Concrete materials laboratory, J. T. Thompson. Highway materials laboratory, T. F. Comber, jr. General materials testing laboratory, A. G. Christie.	400p, 510p, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 700s.
COLLEGE PARK: University of Maryland Civil engineering laboratory, S. S. Steinberg Electrical engineering laboratory, Myron Creese. Engineering experiment laboratory, A. N. Johnson.	510p, 600p, 610p, 700s, 710s.

MASSACHUSETTS

CAMBRIDGE: Harvard University Electrical laboratory, H. E. Clifford. Civil engineering laboratory, G. F. Swain. Metallurgical laboratory, Albert Sauveur. Mechanical laboratory, L. S. Marks. Chemical laboratory. Massachusetts Institute of Technology Textile laboratory, G. B. Haven. Testing (engineering) materials laboratory, H. W. Hayward. Automotive laboratory, D. A. Fales. Mining laboratory, C. E. Locke. Industrial physics laboratory, C. L. Norton. Applied chemistry laboratory, R. T. Haslam. Physical chemistry laboratory, F. G. Keyes. Electrical engineering laboratory, D. C. Jackson. Organic chemistry laboratory, J. F. Norris.	600m, 610m, 620m, 630m, 640m, 650m, 680m, 690m, 710s, 800c, 820c, 830c, 880c, 890c, 910s. 020c, 040c, 140c, 150c, 160c, 170c, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 500c, 510cp, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 660pm, 680pm, 690pm, 700s, 710s, 720s, 800c, 820c, 830c, 860c, 870c, 880c, 890c, 910s.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MASSACHUSETTS—Continued

Location and name of laboratory	Commodities and nature of tests ¹
FALL RIVER: Bradford Durfee Textile School.....	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp (rayon), 770s (textile).
LOWELL: Lowell Textile School..... Textile chemistry laboratory, Louis A. Olney. Textile design laboratory, Hermann H. Bachmann. Textiles—physical laboratory, Edgar H. Barker.	230c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500ch, 800c, 840c, 870c.
TUFTS COLLEGE: Tufts College..... Civil engineering laboratory, G. C. Anthony. Physics laboratory, G. P. Bacon. Thermodynamics laboratory, C. H. Chase. Mechanical laboratory, E. MacNaughton. Electrical laboratory, M. S. Munro. Chemistry laboratory, F. W. Durkee. Strength of materials laboratory, E. H. Wright.	010c, 020c, 030c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 160cp, 170cp, 230c, 300c, 400pc, 470c, 490c, 500c, 510pc, 520c, 530c, 540c, 550c, 570c, 590c, 600pc, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 710sp, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
WORCESTER: Worcester Polytechnic Institute..... Electrical laboratory, H. B. Smith. Chemistry laboratory, W. L. Jennings. Physics laboratory, A. W. Duff. Mechanical laboratory, F. W. Roys. Civil engineering laboratory, A. W. French.	020c, 030c, 040c, 060c, 120c, 130c, 140c, 150c, 160c, 170c, 200cp, 230c, 220c, 230c, 280c, 310c, 410p, 500cp, 510cph, 520ca, 550p, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700s, 710s, 720s, 740s, 750s, 760s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910s.

MICHIGAN

ANN ARBOR: University of Michigan..... Engineering research laboratory, A. E. White.	060p, 400p, 500c, 510p, 530p, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 660pm, 680pm, 690pm, 700s, 710s, 720s, 760s, 800c, 820c, 830c, 840cp, 880c, 890c, 910s.
DETROIT: University of Detroit..... Automotive engineering laboratory, J. J. Caton. Civil engineering laboratory, D. P. Gilmore. Electrical engineering laboratory, H. O. Warner. Mechanical laboratory, R. E. Lawrence. Chemical laboratory, John P. Morrissey. Physics laboratory, James L. McGeary.	040cpa, 200cpa, 300cpa, 310cpa, 330cpa, 360cpa, 410a, 500apc, 510apc, 520apc, 530apc, 540apc, 570apc, 600acmp, 630acmp, 640acmp, 650acmp, 700ps, 710s, 720s, 800ac, 810ac, 820ac, 840ac, 850ac, 870ac, 880ac, 890ac.
EAST LANSING: Michigan State College..... Engineering experiment station, G. W. Bissell. Mechanical laboratory, H. B. Dirks. Electrical laboratory, L. S. Foetz. Civil engineering laboratory, Chester Allen. Metallurgical laboratory, E. D. Kinney. Agricultural experiment laboratory, R. S. Shaw. Chemistry laboratory, Arthur J. Clark. Bacteriology laboratory, Ward Giltner. Beal botanical laboratory, Ernst A. Bessey. Wood technology laboratory, A. K. Chittenden. Milk and cream laboratory, O. E. Reed. Home economics laboratory, Jean Krueger. Farm crops laboratory, J. F. Cox.	000b, 010cb, 020cb, 030c, 040c, 100cb, 110cb, 120c, 130c, 140c, 150c, 160cb, 170cb, 220cb, 230c, 240c, 300c, 310c, 320c, 330b, 340c, 360c, 370c, 390c, 400pi, 410p, 490c, 500c, 510p, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700s, 710s, 730s, 760s, 800cb, 810cb, 820c, 830c, 840c, 880cb, 890c.
HOUGHTON: Michigan College of Mines..... Assaying laboratory, A. T. Sweet. Testing laboratory, George Christensen. Chemical laboratory, C. M. Carson. Metallographic laboratory, J. L. Young. Ore Dressing laboratory, N. H. Manderfield.	500c, 600cm, 610cm, 620cm, 640cm, 650cm, 680cm, 690cm.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MINNESOTA

Location and name of laboratory	Commodities and nature of tests ¹
MINNEAPOLIS:	
University of Minnesota.....	020c, 040cp, 060p, 100c, 110c, 120c,
Engineering materials laboratory, G. C. Priester.	130c, 140c, 150c, 160c, 170c, 200c,
Hydraulics laboratory, J. O. Jones.	220c, 240c, 260c, 280c, 300ca, 310ca,
Highway engineering laboratory, F. C. Lang.	320ca, 330ca, 340ca, 360ca, 370ca,
Structural engineering laboratory, J. I. Parcel.	400p, 410p, 420p, 430p, 470pa, 480pa,
Heating, ventilation, and refrigeration laboratory, F. B. Rowley.	490pa, 500cp, 510cp, 530cp, 600cp,
Steam and power plants laboratory, C. F. Shoop.	610p, 620p, 630p, 640p, 650p, 680p,
Internal combustion engines laboratory, B. J. Robertson.	690p, 700s, 710s, 720s, 730s, 740s,
Electric power laboratory, W. T. Ryan.	750s, 760s, 770s, 780s, 790s, 800pct,
Electric instruments laboratory, F. W. Springer.	810c, 820c, 830c, 840c, 880c, 910s,
Telephone and telegraph laboratory, G. W. Swenson.	930cp.
Photometric and illumination laboratory, E. W. Johnson.	
Radio laboratory, C. M. Jansky, jr.	
Shop machinery laboratory, S. C. Shipley.	
Technological chemistry laboratory, E. P. Harding.	
Analytical chemistry laboratory, I. W. Geiger.	
Chemical engineering laboratory, C. A. Mann.	
Agricultural machinery laboratory, William Boss.	
Metallurgy laboratory, W. R. Appleby.	
Metallography laboratory, O. E. Harder.	
Mining machinery laboratory, E. W. Davis.	
Pharmacy laboratory, F. J. Wulling.	
Forestry products laboratory, H. Schmitz.	
Biochemistry laboratory, R. A. Gortner.	
Plant pathology laboratory, E. C. Stakman.	
Soils laboratory, F. J. Alway.	
Pathology laboratory, E. T. Bell.	
Pharmacology laboratory, A. D. Hirschfelder.	
Seeds laboratory, A. H. Larson.	

MISSISSIPPI

AGRICULTURAL COLLEGE:	
Mississippi Agricultural and Mechanical College.....	040c, 050c, 100c, 110c, 120c, 130c, 140c,
Electrical laboratory, L. L. Patterson.	150c, 160c, 170c, 410p, 500ch, 510p,
Mechanical laboratory, R. C. Carpenter.	600p, 610p, 700s, 710s, 820c, 830c,
Chemical laboratory, W. F. Hand.	850c.
Physics laboratory, H. W. Moody.	
Bacteriological laboratory, C. F. Briscoe.	
Entomological laboratory, R. W. Harned.	
Agronomy laboratory, A. D. Suttle.	
Botany laboratory, J. M. Beal.	
UNIVERSITY:	
University of Mississippi.....	500ch, 510p, 600cp, 610cp, 700s, 710s.
Chemical laboratory, J. N. Swan.	
Physical laboratory, W. L. Kennon.	
Biological laboratory, L. E. Thatcher.	
Medical laboratory, J. O. Crider.	
Engineering laboratory, J. H. Dorroh.	
Pharmacy laboratory, H. M. Faser.	

MISSOURI

COLUMBIA:	
University of Missouri.....	000abt, 010abet, 020abcip, 030a,
Botany laboratory, W. J. Robbins.	040acpl, 050abt, 070a, 100abc, 110c
Zoology laboratory, W. C. Curtis.	120ac, 130ac, 140a, 170b, 220a, 230a,
Engineering laboratories, E. J. McCaustland.	240abc, 250ab, 340a, 400aips, 410aips,
Chemistry laboratory, Herman Schlundt.	420ips, 500clpa, 510aips, 530ap, 550ap,
Geology laboratory, E. B. Branson.	590ap, 600ips, 610ips, 700is, 730a,
Mineralogical laboratory, W. A. Tarr.	850c, 870a, 880a, 990cpa.
Agricultural chemistry laboratory, A. G. Hlogan.	
Agricultural engineering laboratory, J. C. Wooley.	
Dairy laboratory, A. C. Ragsdale.	
Entomology laboratory, Leonard Haseman.	
Field Crops laboratory, W. C. Etheridge.	
Horticulture laboratory, T. J. Talbert.	
Soils laboratory, M. F. Miller.	
Veterinary laboratory, J. W. Connaway.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MISSOURI—Continued

Location and name of laboratory	Commodities and nature of tests ¹
ROLLA: Missouri School of Mines and Metallurgy----- Chemical laboratory, W. D. Turner. Civil (testing) laboratory, E. G. Harris. Biology laboratory, C. J. Millar. Geology laboratory, C. L. Dake. Mechanical laboratory, R. O. Jackson. Electrical laboratory, F. H. Frame. Mining laboratory, C. R. Forbes. Metallurgy laboratory, C. Y. Clayton. Ceramic laboratory, M. E. Holmes. Experiment station laboratory, M. H. Thornberry.	400p, 410p, 500ch, 510pc, 520pc, 530pc, 540pc, 590pc, 600acmp, 610acmp, 620acmp, 630acmp, 640acmp, 650acmp, 680acmp, 690acmp, 700s, 710s, 750s, 800c, 820c, 830c, 880bc, 910s.
ST. LOUIS: Washington University----- Civil engineering laboratory, J. L. Van Ornum. Mechanical engineering laboratory, E. L. Ohle. Electrical engineering laboratory, W. L. Upson. Chemical engineering laboratory, L. McMaster. Industrial engineering laboratory, A. S. Langsdorf.	020c, 040c, 060p, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 280c, 410p, 500cphl, 510p, 530p, 550c, 570c, 600cpm, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700s, 710s, 740s (conveying), 800c, 810c, 820c, 830c, 840c, 850c, 870c, 890c, 910s.
SPRINGFIELD: Drury College----- Chemistry laboratory, R. Neal.	170c, 830c (poisons), 850c, 880c.

MONTANA

BOZEMAN: Montana State College of Agriculture and Mechanic Arts-- Engineering experiment laboratory, E. B. Norris. Mechanical laboratory, R. T. Challender. Civil engineering laboratory, L. D. Conkling. Electrical laboratory, J. A. Thaler. Chemical laboratory, W. M. Cobleigh and Edmund Burke. Grain inspection laboratory, W. O. Whitcomb. Bacteriological laboratory, D. B. Swingle. Dairy Products laboratory, J. A. Nelson. Entomological laboratory, R. A. Cooley.	410p, 500cp, 510p, 600p, 610p, 700s, 710s.
BUTTE: Montana State School of Mines----- Metallurgical laboratory, G. A. Roush. Mill laboratory, M. F. Haley. Physical laboratory, E. R. Bomersox.	410p, 500hp, 510p, 530p, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 690cpm, 700s, 710s, 750s.

NEBRASKA

LINCOLN: University of Nebraska----- Bacteriological laboratory, H. H. Waite. Botany laboratory, R. J. Pool. Chemistry laboratory, F. W. Upson. Dairy husbandry laboratory, H. P. Davis. Agricultural engineering laboratory, O. W. Sjorgren. Civil engineering laboratory, C. E. Mickey. Electrical engineering laboratory, O. J. Ferguson. Mechanical engineering laboratory, J. W. Haney. Applied engineering mechanics laboratory, G. R. Chat- burn. Entomology laboratory, M. H. Swenk. Physics laboratory, H. H. Marvin. Soils laboratory, W. W. Burr. Zoology laboratory, R. H. Wolcott.	100cp (flour), 250i, 510p, 530p, 710s, 730s (tractors), 910s.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEVADA

Location and name of laboratory	Commodities and nature of tests ¹
RENO: University of Nevada..... Metallurgical laboratory, Walter Palmer. Food and drug laboratory, S. C. Dinsmore. Engineering research laboratory, H. P. Boardman. Wool laboratory, F. C. Wilson. Agricultural research laboratory, S. B. Doten. Chemistry laboratory, George W. Sears.	020cb, 040cb, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 360cp, 500chl, 510p, 550c, 570c, 590cp, 600cpm, 630cpm, 640cpm, 650cpm, 690cpm, 700s, 710s, 730s, 740s, 750s, 810c, 820c, 850c, 880cb.

NEW HAMPSHIRE

DURHAM: University of New Hampshire..... Agricultural experiment laboratory, J. C. Kendall. Engineering laboratory, George W. Case.	020cpb, 100cp, 110cp, 120c, 130c, 140c, 160c, 240c, 250p, 280c, 360p, 400cp, 410cp, 420cp, 430cp, 470cp, 480cp, 490cp, 500ch, 510p, 600p, 730s, 850cp.
HANOVER: Dartmouth College..... Chemistry laboratory, L. B. Richardson. Physics laboratory, C. A. Proctor. Biology laboratory, Leland Griggs. Medical school laboratory, C. C. Stewart. Civil engineering laboratory, R. R. Marsden.	

NEW JERSEY

NEWARK: Newark Technical School..... Civil engineering laboratory, H. W. Heilman. Electrical laboratory, J. C. Peet. Chemical laboratory, V. T. Stewart. Mechanical laboratory, J. A. Brooks.	510p, 600pc, 610pc, 700s, 710s, 910s.
NEW BRUNSWICK: Rutgers University and New Jersey State Agricultural Experiment Station. Control laboratory, Charles S. Cathcart. Ceramics laboratory, George H. Brown. Geological laboratory, J. Volney Lewis. Chemistry laboratory, R. G. Wright. Engineering laboratory, E. H. Rockwell. Rural engineering laboratory, E. R. Gross. Dairy laboratory, John R. Bartlett. Plant pathology laboratory, W. H. Martin. Poultry pathology laboratory, Fred R. Baudette. Agricultural biochemistry laboratory, W. C. Russell. Seed laboratory, Miss Jessie G. Fiske. Entomological laboratory, T. J. Headlee. Soil chemistry and bacteriology laboratory, A. W. Blair, and J. G. Lipman.	
PRINCETON: Princeton University..... Electrical laboratory, M. MacLaren. Mechanical laboratory, A. M. Greene. Civil engineering laboratory, F. H. Constant. Chemical laboratory, H. L. Taylor. Physics.	410p, 500ch, 510p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700s, 710s, 910s.

NEW MEXICO

ALBUQUERQUE: The State University of New Mexico..... Electrical laboratory, P. S. Donnell. Engineering laboratory, T. T. Eyre. Chemistry laboratory. Biology laboratory. Physics laboratory. Geology laboratory. Psychology laboratory. Home economics laboratory.	040cb, 100cb, 110cb, 120cb, 130cb, 140cb, 150cb, 160cb, 170cb, 500c, 510c, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 820c, 830c, 880c.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW MEXICO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
SOCORRO:	
New Mexico School of Mines.....	500c, 510pc, 530pc, 550pc, 570pc, 590pc,
Metallurgical laboratory, A. S. Walter.	600c, 610c, 620c, 630c, 640c, 650c,
Chemical laboratory, A. R. Ferguson.	660c, 680c, 690c, 820c, 850c, 880c.
Concrete laboratory, Thos. H. McCarthy.	
STATE COLLEGE:	
New Mexico College of Agriculture and Mechanic Arts...	410p, 500chp, 510p, 530p, 600pm,
Materials testing laboratory, H. O. Garst.	610pm, 620pm, 630pm, 640pm, 650pm,
Mechanical engineering laboratory, H. M. Milton, jr.	680pm, 690pm, 700p, 710ps, 760p,
Electrical engineering laboratory, R. W. Goddard.	910ps.

NEW YORK

ALFRED:	
Alfred University.....	020c, 170c, 220c, 500hl, 510c, 530ch,
Analytical laboratory, A. H. Radasch.	600c, 810c, 820c, 830c, 870c, 880c.
Inorganic chemistry laboratory, Paul C. Saunders.	
New York State School of Ceramics.	
BROOKLYN:	
Polytechnic Institute of Brooklyn.....	360h, 400p, 410p, 500p, 510p, 540h,
Material testing laboratory, William J. Moore.	600p, 610p, 620p, 630p, 640p, 650p,
Mechanical laboratory, William J. Moore.	690p, 700s, 710s, 720s, 740s, 750s,
Industrial chemical laboratory, J. C. Olsen.	760s, 780s, 790s, 800c, 820c, 830c,
Physics laboratory, Erich Hausman.	840c, 880c, 910s.
Electrical laboratory, Robin Beach.	
Pratt Institute	040c, 050cp, 060cp, 140c, 170c, 200c,
Mechanical laboratories, A. C. Harper.	210c, 230c, 280c, 400p, 410p, 500ch,
Electrical laboratory, A. L. Cook.	510c, 520c, 530c, 540c, 550c, 570c,
Chemical laboratory, Allen Rogers.	590c, 600cmp, 610cpm, 620cpm, 630cp,
Machine shop, J. W. Burley.	640cp, 650cp, 660c, 670c, 680cp, 690cp,
Forge and heat treating shop, C. B. Jones.	700s, 710s, 720s, 730s, 740s, 750s,
Foundry, P. P. Miller.	760s, 770s, 780s, 790s, 800c, 820c,
	830c, 840cp, 850c, 860c, 870c, 880c,
	890c.
ITHACA:	
Cornell University.....	020bc, 100cp, 110cp, 240i, 500h (coal,
Chemical laboratory, L. M. Dennis.	petroleum), 510p, 530p, 600p, 630p
Physics laboratory, E. Merritt.	(aluminum, antimony), 640p, 700s,
Laboratory of engineering experiment, H. Diederichs.	750s (pumping), 780s, 850cp.
New York State Agricultural Experiment Station (Geneva, N. Y.), R. W. Thatcher.	
NEW YORK CITY:	
College of the City of New York.....	040c, 140c, 150c, 300p, 470p, 500c,
Materials laboratory, Ralph E. Goodwin.	510c, 520c, 530c, 540c, 550c, 570c,
Electrical laboratory, H. Baum.	590c, 600cpm, 610cpm, 620cpm, 630c,
Mechanical laboratory, Arthur Bruckner.	640c, 650c, 680c, 690c, 700s, 710s,
Analytical laboratories, Robert Curtis.	720s, 760s, 790s, 800c, 820c, 830c,
Physical chemical laboratory, R. Stevenson.	840c, 850c, 860c, 890c, 910hpx, 970c.
Industrial and chemical engineering laboratory, H. R. Moody.	
Physics laboratory, William Fox.	
Columbia University	410p, 500c, 510p, 530p, 560c, 600cpm,
Testing laboratory, civil engineering, A. H. Beyer.	610cpm, 620cpm, 630cpm, 640cpm,
Chemical engineering laboratory, D. D. Jackson.	650cpm, 660cpm, 680cpm, 690cpm,
Ore dressing laboratory, School of Mines, A. F. Taggart.	710s, 880c.
Physics laboratory, G. B. Pegram.	
Chemistry laboratory, H. C. Sherman.	
Electrical engineering laboratory, W. I. Slichter.	
Mechanical engineering laboratory, C. E. Lucke.	
Cooper Union Institute of Technology	300p, 410p, 470p, 510p, 530p, 600pm,
Material testing laboratory, F. E. Foss.	610pm, 620pm, 630pm, 640pm, 650pm,
Electrical engineering laboratory, Norman L. Towle.	680pm, 690pm, 710s.
Manhattan College	150c, 810c.
New York University.....	020c, 040cp, 050p, 060p, 100c, 110c,
General testing laboratory, Collins P. Bliss.	120c, 130c, 140c, 150c, 160c, 170c,
Materials testing laboratory, C. T. Schwarze.	200c, 210c, 220c, 230c, 300cp, 320ca,
Electrical laboratory, J. L. Arnold.	330ca, 340ca, 360ca, 370ca, 390ca,
Chemical engineering laboratory, H. G. Masson.	410p, 470cp, 500cp, 510cp, 530cp,
Havemeyer chemical laboratory, J. P. Simmons.	540cp, 570cp, 590cp, 600p, 610p,
	620pc, 630cp, 640cp, 680cp, 690cp,
	700s, 710s, 720s, 750s, 780s, 790s, 800c,
	810c, 820c, 830c, 840c, 850c, 870c,
	880c, 890c, 910sc, 920s, 950c, 970c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW YORK—Continued

Location and name of laboratory	Commodities and nature of tests ¹
POTSDAM: Clarkson College of Technology----- Physics laboratory, F. F. Piper. Mechanical laboratory, J. A. Ross. Civil engineering laboratory, F. C. Wilson. Electrical laboratory, A. R. Powers. Hydraulics laboratory, A. R. Powers. Chemical laboratory.	500ch, 510p, 600cp, 610cp, 700s, 710s.
POUGHKEEPSIE: Vassar College----- Physics laboratory, Edna Carter. Chemistry laboratory, Mary Louise Landon.	020c, 040c, 100c, 140c, 160c, 500c, 510c (cement), 600c, 610c, 620c, 630c, 640c, 650c, 680c, 710p, 890c.
ROCHESTER: University of Rochester----- Chemistry laboratory, V. J. Chamber. Physics laboratory, H. E. Lawrence. Mechanical engineering laboratory, J. W. Gavett, jr. Medical school laboratory, G. H. Whipple.	500lh, 510p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 780s (boiler performance).
SCHENECTADY: Union College----- Electrical engineering laboratory, E. J. Berg. Civil engineering laboratory, F. P. McKibben. Thermodynamics laboratory, J. N. Vedder. Materials testing laboratory, M. F. Sayre.	020c, 040c, 100c, 120c, 130c, 140c, 500c, 510p, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cp, 680cpm, 690cpm, 880c.
SYRACUSE: Syracuse University----- Materials testing laboratory, Louis Mitchell. Chemical laboratory, R. S. Boehner. Botanical laboratory, W. L. Bray. Hydraulic laboratory, S. D. Sibley. Electrical laboratory, H. W. Henderson. Physical laboratory, R. A. Porter. Zoological laboratory, W. M. Smallwood. Bacteriological laboratory, H. N. Jones. Mechanical laboratory, L. N. Street.	000p, 010pc, 020cb, 040cp, 100ac, 110cs, 120p, 140ac, 150pc, 160c, 170c, 220c, 240a, 250i, 300ac, 330cp, 400p, 410p, 420p, 470cp, 500cp, 510cp, 520c, 530c, 540c, 550c, 570c, 590p, 600cp, 610p, 620c, 630c, 640cp, 650cp, 660c, 680c, 690cp, 710s, 800pc, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
TROY: Rensselaer Polytechnic Institute----- Electrical engineering laboratory, W. L. Robb. Physics laboratory, R. A. Patterson. Engineering materials laboratory, Thomas R. Lawson. Chemical laboratory, A. W. Davison. Biological laboratory.	020c, 040c, 110c, 120c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 410p, 500ch, 510p, 520c, 530cp, 540c, 550c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910s, 930c, 970c.

NORTH CAROLINA

CHAPEL HILL: University of North Carolina----- Chemical engineering laboratory, F. C. Vilbrandt. Electrical engineering laboratory, P. H. Daggett. Materials testing laboratory, H. F. Janda. Highway testing laboratory, H. F. Janda. Sanitary engineering laboratory, H. G. Baity. Mechanical engineering laboratory, E. G. Hooper.	020b, 410p, 500chl, 510p, 530p, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 710s, 880bc, 910s.
RALEIGH: North Carolina State College of Agriculture and Engineering. Nutritional laboratory, Doctor Halverson. Textile research laboratory, Thomas Nelson. Engineering research laboratory, H. B. Shaw. Cotton fiber research laboratory, R. Y. Winters. Soil chemistry laboratory, L. G. Willis. Chemical engineering laboratory, E. E. Randolph.	300cp, 310cp 320cp, 330cp, 340cp, 360cp, 370cp, 390cp (rayon), 410p, 500hl, 510cp, 530c, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 710s, 820c, 850cs, 880c, 910s.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NORTH DAKOTA

Location and name of laboratory	Commodities and nature of tests ¹
FARGO:	
North Dakota Agricultural College.....	000i, 090bt, 100c, 240c, 410p, 510p,
Animal husbandry laboratory, J. H. Shepperd.	600p, 610p.
Pure seed laboratory, H. L. Bolley.	
Serum institute laboratory, A. F. Schalk.	
Poultry department laboratory, O. A. Barton.	
Cereals laboratory, C. E. Mangels.	
GRAND FORKS:	
University of North Dakota.....	500ch, 510cp, 530pc, 590c, 600cpm,
Division of mines and mining experiment laboratory,	610cpm, 620cpm, 630cpm, 640cpm,
A. W. Gauger.	650cpm, 660cpm, 680cpm, 690cpm,
	710s, 880c, 910s.

OHIO

ADA:	
Ohio Northern University.....	030ab, 050ab, 070ab, 500ch, 510p, 600p,
Chemical laboratory, F. C. Slesman.	610p, 710s, 820c, 970i.
Civil engineering laboratory, A. R. Webb.	
Electrical laboratory, I. St. Clair Campbell.	
Physics laboratory, F. L. Berger.	
Mechanical laboratory, John A. Needy.	
Biological laboratory, H. E. Huber.	
AKRON:	
Municipal University of Akron.....	020cb, 040c, 100cb, 110c, 120c, 130c,
Bureau of city tests laboratory, E. E. Schaefer.	140c, 170c, 200cp, 300p, 410p, 500hp,
Knight chemical laboratory, H. E. Simmons.	510p, 530cp, 600cm, 610cm, 630cm,
Bacteriological laboratory, R. D. Fox.	640cm, 820c, 840c, 880cb, 890c.
Biological laboratory, A. B. Plowman.	
Physical laboratory, Ross C. Durst.	
ATHENS:	
Ohio University.....	000b, 030b, 090b, 120b, 240b, 290b,
Physics and electrical laboratories, A. A. Atkinson.	500c, 630c, 640c, 650c, 700s, 710s.
Civil engineering laboratory, L. J. Addicott.	
Chemical laboratories, W. B. Bentley, J. R. Morton.	
Biology and botany laboratories, W. A. Matheny.	
Zoology and embryology laboratories, W. F. Mercer.	
Physiology laboratory, E. Rowles.	
Anatomy laboratory, R. Elliott.	
Bacteriology laboratory, C. Frey.	
Psychology laboratory, J. P. Porter.	
CINCINNATI:	
Ohio Mechanics Institute.....	500c, 510p, 600cp, 610cp, 620cp, 630cp,
	640cp, 650cp, 680cp, 690cp.
University of Cincinnati.....	040a, 050abc, 060abc, 140acp, 160a,
Industrial research laboratory, Herman Schneider.	170c, 200cps, 210acp, 220c, 230c,
Chemical laboratory, R. S. Tour.	260acp, 300p, 310aps, 400p, 410p,
Mechanical laboratory, A. L. Jenkins.	470s, 490s, 500ch, 510acp, 520acp,
Civil engineering laboratory, H. B. Luther.	530acp, 550p, 560p, 590p, 600acmspx,
Electrical laboratory, A. M. Wilson.	610cp, 620cmp, 630cmp, 640acmpsx,
Physical laboratory, Nevin M. Fenneman.	650c, 680cmp, 690cm, 760p, 800c,
Tanner's council laboratory, George D. McLaughlin.	810c, 820c, 830c, 840acps, 850c, 860c,
Lithographic research laboratory, R. F. Reed.	870ac, 880abc, 890c, 910s, 920p,
	930cps, 950p.
CLEVELAND:	
Case School of Applied Science.....	020ep, 040cp, 060p (belting), 100c, 110c,
Physics laboratory, Dayton C. Miller.	120c, 130c, 140c, 150c, 160c, 170c,
Electrical laboratory, Henry B. Dates.	200psc (belting), 210c, 220c, 230c,
Mechanical laboratory, F. H. Vose.	280c, 290c, 300cp, 310cp, 320cp,
Chemical laboratory, A. W. Smith.	330cp, 340cp, 360cp, 370cp, 390cp,
Materials testing laboratory, R. H. Danforth.	400p, 410p, 420p, 500cphl, 510ep,
	520c, 530cp, 540c, 550c, 560c, 570c,
	590c, 600cpm, 610cpm, 620cpm,
	630cpm, 640cpm, 650cpm, 680cm,
	690cm, 700s, 710s, 720s, 730s, 740s,
	750s, 760s, 770s, 780s, 790s, 800c,
	820c, 830c, 840c, 850c, 870c, 880c,
	890c, 910s, 920s.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

OHIO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
COLUMBUS:	
Ohio State University-----	000c, 010c, 020c, 030c, 060p, 100c,
Industrial chemical and chemical engineering laboratory, James R. Withrun.	110c, 120c, 130c, 140cp, 160c, 200cp,
Metallurgical laboratory, D. J. Demorest.	210c, 220c, 230c, 240c, 280c, 290c,
Mechanical engineering laboratory, William T. Ma- gruder.	300cp, 310c, 330cp, 340cp, 360cp,
Chemical laboratory, William McPherson.	390cp, 410p, 500cph, 510cp, 520p,
	530ch, 540c, 550c, 560ca, 570c, 590c,
	600cpmx, 610cpmx, 620cpmx, 630- cpmx, 640cpmx, 650cpmx, 660cpmx,
	680cpmx, 690cpmx, 700s, 720s, 740s,
	750s, 760s, 770s, 780s, 790s, 800c,
	820c, 830c, 840c, 850c, 880c, 890c.
DAYTON:	
University of Dayton-----	010c, 020c, 040c, 110c, 140c, 160c, 170c,
Mechanical laboratory, Adam Hoffman.	200c, 260c, 280c, 400p, 500p, 510p,
Civil engineering laboratory, Bernard Schad.	570c, 590c, 600cp, 610c, 620c, 630c,
Electrical laboratory, Ulrich Rappel.	640cp, 650c, 680c, 690c, 710s, 800c,
Chemical laboratory, William Wohlleben.	820c, 830c, 840c, 850c, 870c, 890c.
Biological laboratory, Francis Molz, and William Beck.	
OXFORD:	
Miami University-----	020cb, 040c, 100c, 110c, 120c, 130c,
	140c, 150c, 160c, 170c, 300c, 310c,
	370c, 500c, 570c, 600c, 610c, 620c,
	630c, 640c, 650c, 660c, 680c, 690c,
	700p, 710p, 800c, 810c, 820c, 830c,
	840c, 850c, 870c, 880c, 890c, 910p.

OKLAHOMA

NORMAN:	
University of Oklahoma-----	410p, 500ch, 510p, 600cp, 610cp, 620cp,
Mechanical laboratory, G. B. Helmrich.	630cp, 640cp, 650cp, 660cp, 680cp,
Electrical laboratory, F. G. Tappan.	690cp, 700s, 710s, 820c, 830c.
Petroleum laboratory.	
Civil engineering laboratory, J. F. Brooks.	
Physics laboratory, H. L. Dodge.	
Chemical laboratory.	
STILLWATER:	
Oklahoma Agricultural and Mechanical College-----	020c, 100c, 110c, 140c, 240p, 410p,
Chemistry laboratory, V. G. Hellar.	500c, 510cp, 600cp, 610cp, 850c.
General chemistry laboratory, O. M. Smith.	
Dairy products laboratory, A. D. Burke.	
Soils laboratory, H. J. Harper.	
Mechanical engineering laboratory, R. L. Rhoads.	

OREGON

CORVALLIS:	
Oregon Agricultural College-----	000c, 020cab, 030b, 040c, 090acip,
Seed laboratory.	100api, 110capi, 120c, 130acip, 140-
Grain and forage laboratory, and experimental farm laboratory, G. R. Hyslop.	acip, 170b, 200s, 210acip, 220acip,
Materials testing laboratory, S. H. Graf.	230acip, 240api, 290pab, 300ac, 320ac
Mechanical laboratory, J. R. DuPriest.	(fiber silk), 330ap, 340api, 360ac,
Mines laboratory, C. E. Newton.	370ac, 400p, 410p, 420acips, 470ps,
Bacteriological laboratory, G. V. Copson.	500hlpmac, 510acimp, 530achimps,
Chemical engineering laboratory, F. E. Rowland.	540achimp, 550achimps, 560acimp,
Electrical engineering laboratory, F. O. McMillan.	570achimp, 590achimp, 600hmp, 610i,
Hydraulic laboratory, H. S. Rogers-----	620achmp, 630hmp, 640hmp, 650hmp,
Physical laboratory, W. Weniger-----	660achmp, 670achmp, 680hmp, 690-
	hmp, 700psi, 710ps, 720ps, 730s,
	750psi, 790ps, 830acip, 850acip, 880b,
	910ps.
PORTLAND:	
Oregon Institute of Technology-----	410p, 500chl, 510p, 600p, 610p, 710s,
Structural materials laboratory, W. T. Williams.	910s.
Electrical laboratory, Walter Haynes.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

PENNSYLVANIA

Location and name of laboratory	Commodities and nature of tests ¹
BETHLEHEM:	
Lehigh University----- Chemistry laboratory, H. M. Ullman. Materials laboratory, R. J. Fogg. Mining laboratory, Howard Eckfeldt. Metallurgy laboratory, Bradley Stoughton. Mechanical laboratory, M. C. Stuart. Electrical laboratory, William Esty. Physics laboratory, Barry MacNutt.	020cp, 040cp, 060p, 140cp, 160cp, 200p, 410p, 500c, 510p, 530c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 700s, 710s, 750s, 800c, 820c, 830c, 840c, 860c, 870c, 890c, 910s.
EASTON:	
Lafayette College----- Mining laboratory, W. B. Plank. Civil engineering laboratory, F. O. Dufour. Mechanical laboratory, D. B. Prentice. Chemical laboratory, E. C. Bingham. Electrical laboratory, M. King. Railroad engineering laboratory, H. T. Spengler.	330p, 410p, 500ch, 510p, 600p, 610p, 700s, 710s, 720s, 760s, 790s, 820c, 830c.
GETTYSBURG:	
Gettysburg College----- Chemical laboratory, John B. Zinn. Electrical and mechanical laboratory, R. Rosenstengel. Civil engineering laboratory, Frank H. Clutz.	020c, 140c, 170c, 410p, 510p, 600p, 850c.
LEWISBURG:	
Bucknell University----- Industrial and chemical engineering laboratory, S. C. Ogburn, jr. Biochemical laboratory, O. S. Grover. Biological laboratory, N. F. Davis. Mechanical engineering laboratory, F. E. Burpee. Physics laboratory, F. M. Simpson. Civil engineering laboratory, D. M. Griffith.	020cb, 040cp, 170c, 260cp, 300cp, 410p, 470c, 490c, 500pc (coal), 510p, 530pc, 450c, 600pc, 610pc, 640c, 650c, 660c (platinum), 820c, 830c, 840c, 850c, 880cb, 890c, 970cp.
PHILADELPHIA:	
Drexel Institute----- Electrical engineering laboratory, R. C. Disque. Testing laboratory, H. L. Bowman. Mechanical engineering laboratory, J. H. Billings. Chemical laboratory, L. D. Stratton.	500ch, 600cpm, 610cpm, 620cpm, 630- cpm, 640cpm, 650cpm, 680cpm, 690- cpm, 710s, 840c, 880c.
University of Pennsylvania----- Mechanical engineering laboratory, R. H. Fernald. Experimental engineering laboratory, W. H. Kavanaugh. Electrical engineering laboratory, Harold Pender. Chemical laboratory, O. L. Shinn. Materials of construction laboratory, H. C. Berry. Hydraulics laboratory, W. S. Pardoe. Road materials laboratory, W. H. Barton.	020c, 040c, 140c, 150c, 160c, 170c, 500cis, 510cpm, 530c, 550c, 570c, 600p, 640pc, 650c, 660c, 680c, 690c, 700is, 710s, 720s, 740ips, 750ips, 760ips, 770ips, 780ips, 790ips, 800c, 810c, 820c, 830c, 890c, 910s.
PITTSBURGH:	
Carnegie Institute of Technology----- Chemical engineering laboratories, J. H. James. Hydraulic laboratory, F. M. McCullough. Materials testing laboratory, F. M. McCullough. Electrical engineering laboratory, W. R. Work. Mechanical engineering laboratory, W. Trinks. Mining and metallurgical engineering laboratory, A. Aston. Physics laboratories, H. S. Hower.	010c, 020c, 030c, 040c, 050c, 060c, 070c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 250c, 260c, 280c, 290c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 400cp, 410cp, 420c, 470c, 480c, 490c, 500achp, 510achp, 520achp, 530achp, 540achp, 550achp, 570achp, 590achp, 600acmp, 610acmp, 620acmp, 630acmp, 640acmp, 650acmp, 680acmp, 690acmp, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910sp, 970c.
University of Pittsburgh----- Chemical laboratory, H. C. Bashioum. Civil engineering laboratory, J. Hammond Smith. Mechanical laboratory, John Weber. Mining laboratory, R. M. Black. Physics laboratory, A. G. Worthing. Metallurgical laboratory, S. L. Goodale.	410cp, 420p, 470p, 500chp, 510p, 530ph, 600p, 610p, 700s, 710s, 720s, 750s, 800c, 820c, 830c, 910s, 950p.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

PENNSYLVANIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
STATE COLLEGE: Pennsylvania State College----- Agriculture laboratory, R. L. Watts. Chemical and physical laboratory, Gerald L. Wendt. Engineering laboratory, R. L. Sackett. Mining and metallurgy laboratory, E. A. Holbrook.	000b, 010bc, 020bc, 040bc, 050bc, 100bc, 110bc, 120bc, 130bc, 140bc, 150bc, 160bc, 170bc, 200c, 210c, 220c, 230c, 240c, 250c, 260c, 280c, 290c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 400p, 410p, 420p, 500hl, 510cp, 520cp, 530cph, 540i, 550i, 560i, 570cp, 590cp, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910s, 920s, 930s, 970s.
SWARTHMORE: Swarthmore College----- Civil engineering laboratory, Weston E. Fuller. Electrical engineering laboratory, Lewis Fussell. Mechanical engineering laboratory, Charles G. Thatcher.	410p, 510p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 700s, 710s, 820c, 830c.
VILLANOVA: Villanova College----- Anatomical and biological laboratory, J. A. Dougherty. Chemical and physiological laboratory, Eli Duncombe. Organic chemistry laboratory, Robert Fitzgerald. General physics laboratory, J. J. Crawford. Magnetic and electric laboratory, C. A. McGeehan. Mechanical laboratory, J. Stanley Morehouse.	040c, 140c, 150c, 160c, 200c, 210c, 220c, 230c, 280c, 290c, 500c, 510p, 570c, 600cp, 610cp, 630c, 640cp, 650c, 700p, 710p, 760p, 800c, 810c, 820c, 830c, 840c, 870c.

PHILIPPINE ISLANDS

MANILA: University of the Philippines----- Chemistry experiment station laboratory, F. O. Santos. Sugar laboratory, M. L. Roxson.	010c, 020c, 030c, 090c, 110c, 120c, 130c, 150c, 160c, 240c, 290c, 850c.
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PORTO RICO

RIO PIEDRAS: University of Porto Rico----- Sugar chemistry laboratory. Engineering laboratory. Chemistry of foods laboratory. Biology laboratory.	010bc, 020cb, 030bc, 040bc, 120bc, 130bc, 140bc, 150bc, 160c, 290bc, 410p, 500c, 510p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 850c.
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RHODE ISLAND

KINGSTON: Rhode Island State College----- Mechanical laboratory, R. L. Wales. Civil engineering laboratory, S. H. Webster. Electrical and physics laboratory, William Anderson. Chemical laboratory, J. W. Ince. PROVIDENCE: Brown University----- Astronomy laboratory, Clinton H. Currier. Biology laboratory, Frederick P. Gorham. Botany laboratory, Walter H. Snell. Chemistry laboratory, Charles A. Kraus. Engineering laboratory, William H. Kenerson. Physics laboratory, Albert De F. Palmer. Geology laboratory, Charles W. Brown.	410p, 500chl, 510p, 600p, 610p, 700s, 710s, 820c, 830c.
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¹See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

SOUTH CAROLINA

Location and name of laboratory	Commodities and nature of tests ¹
CLEMSON COLLEGE:	
The Clemson Agricultural College.....	020cb, 110c, 170c, 260c, 280c, 410p, 500c,
Botany and bacteriology laboratory, W. B. Aull.	510p, 520c, 530i, 540i, 550i, 560i, 570i,
Geology and mineralogy laboratory, F. H. H. Calhoun.	590i, 600cp, 610cp, 620c, 630c, 640c,
Chemical laboratory, R. N. Brackett.	650c, 680c, 690c, 800c, 810c, 820c,
Electrical laboratory, F. T. Dorgan.	830c, 840c, 850c, 860c, 870c, 880cb,
Mechanical laboratory, S. B. Earle.	890c.
Civil engineering laboratory, E. L. Clarke.	
Engineering experiment station laboratory, S. B. Earle.	
Research laboratory, H. W. Barne.	
COLUMBIA:	
University of South Carolina.....	000b, 020c, 030b, 040cp, 050b, 070b,
Electrical engineering laboratory, T. F. Ball.	110c, 120b, 130b, 140c, 150c, 160c,
Geology laboratory, Stephen Taber.	170cp, 240b, 260c, 290b, 400b, 410pb,
Biological laboratory, A. C. Moore.	430p, 510cp, 530c, 540c, 550c, 570c,
Pharmacy laboratory, E. T. Motley.	590c, 710s, 800cp, 820cp, 970cp.
Chemical laboratory, G. F. Lipscomb.	
Strength of materials laboratory, W. E. Rowe.	
Physics laboratory, A. C. Carson.	

SOUTH DAKOTA

BROOKINGS:	
South Dakota State College.....	000p, 010cb, 020cb, 040c, 100cs, 110p,
Fuel and steam laboratory, H. H. Hoy.	120c, 130c, 140c, 160c, 170c, 200c,
Cement concrete testing laboratory, H. S. Carter.	210cp, 240cs, 250b, 300c, 320cp, 330c,
Electrical machinery laboratory, H. M. Crothers.	340c, 360cp, 370c, 410p, 500h, 510cp,
Drug assay laboratory, E. K. Sules.	530cp, 600p, 610p, 710s, 730s, 810c,
Textile laboratory, A. Holgrin.	820c, 830c, 850c, 860c, 880c, 890c.
Chemical laboratory, B. A. Dunbar.	
Botanical laboratory, A. T. Evans.	
RAPID CITY:	
South Dakota State School of Mines.....	410p, 500eph, 510cp, 530c, 600cpm,
Electrical laboratory, J. O. Kammerman.	620cpm, 630cpm, 640cpm, 650cpm,
Mining laboratory, F. C. Lincoln.	680cpm, 690cpm, 700s, 710s, 820c,
Civil engineering laboratory, J. C. Rathbun.	830c, 880c, 910s.
Physics laboratory, C. G. Watson.	
Metallurgical laboratory, Baneroft Gore.	
Chemical laboratory, Andrew Karsten.	
Mining experiment station laboratory, Charles Bentley.	
VERMILLION:	
University of South Dakota.....	000b, 010b, 020b, 030b, 040c, 050b,
State health laboratory, J. C. Ohlmacher.	060p, 090cb, 100c, 110c, 120b, 140c,
Department of chemistry laboratory, Arthur M. Pender.	150c, 160cb, 170cb, 220c, 230c, 300ps,
State geological survey laboratory, E. P. Rothrock.	330ps (rope), 360ps, 370ps, 390ps,
Physical and mechanical testing laboratory, M. W. Davidson.	400p, 410p, 420p, 430p, 500chl, 510cp,
Home economics laboratory, Mary Edna Courtney.	520c, 530c, 540c, 550c, 570c, 590c,
Pharmodynamics laboratory, H. Bounquin.	600pc, 610p, 620c, 630c, 640c, 650c,
Road and building materials laboratory, J. M. Brown.	680c, 690c, 700s, 710s, 720s, 770s,
Physics laboratory, L. E. Okeley.	800c, 810c, 820c, 830c, 850c, 870c,
Electrical engineering laboratory, B. B. Brackett.	880cb, 890c, 910s, 980p.

TENNESSEE

KNOXVILLE:	
University of Tennessee.....	410p, 500hl, 510cp, 600p, 610p, 700s,
Engineering experiment station laboratory, C. E. Ferris.	710s.
Hydraulic laboratory, J. A. Switzer.	
Mechanical laboratory, W. R. Woolrich.	
Electrical laboratory, C. A. Perkins.	
Civil engineering laboratory, W. W. Carson.	
Chemistry laboratory.	
Physics laboratory.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

TENNESSEE—Continued

Location and name of laboratory	Commodities and nature of tests ¹
NASHVILLE: Vanderbilt University----- Industrial laboratory, J. M. Breckenridge. Physical laboratory, T. J. Buchei. Organic laboratory, A. W. Ingersoll. Analytical laboratory, F. S. Conover. Metallurgy laboratory, W. P. Fishel.	170c, 410p, 500chl, 510cp, 530cp, 570c, 600cm, 610cm, 620c, 630cm, 640cm, 650cm, 680cm, 690cm, 710s, 840cs, 850c, 870c, 910s.
TEXAS	
AUSTIN: University of Texas----- Industrial chemistry experiment station, E. P. Schoch. Engineering experiment station, F. E. Giesecke. COLLEGE STATION: Agricultural and Mechanical College of Texas----- State chemist and division of chemistry experiment station, G. S. Frogs. Department of chemistry laboratory, C. C. Hedges. Civil engineering department laboratory, J. J. Richey. Wool laboratory, J. M. Jones. Department of agricultural engineering laboratory, D. Scoates.	500hl, 510cp, 530cp, 700s, 710s, 820c, 830c, 880cb, 910s. 100c, 110c, 120c, 130c, 140c, 360c, 410p, 500chl, 510p, 530ph, 600p, 610p, 700s, 710s, 720s, 730s, 850c.
HOUSTON: The Rice Institute----- Chemistry laboratory, H. B. Weiser. Industrial chemistry laboratory, A. J. Hartsook. Physics laboratory, H. A. Wilson. Biology laboratory, Edgar Altenburg. Mechanical laboratory, J. H. Pound. Electrical engineering laboratory, H. K. Humphrey. Civil engineering laboratory, L. B. Ryon.	020cp, 140cp, 160cp, 170cp, 410p, 500chl, 510cp, 530cps, 540c, 570c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 710s, 750ps, 760ps, 780s, 790ps, 820c, 830c, 840c, 850c, 870c, 880cb, 890c, 910s.

UTAH

SALT LAKE CITY: University of Utah----- Mechanical engineering laboratory, E. H. Beckstrand. Chemistry laboratory, W. D. Bonner. Mining laboratory, R. S. Lewis. Physics and electrical laboratories, J. F. Merrill. Nutrition laboratory, Rose H. Widtsoe. Bacteriology and pathology laboratory, L. L. Daines. Geology and mineralogy laboratory, F. J. Pack. Metallurgy laboratory, R. H. Bradford. Mining and metallurgical research laboratory, A. M. Gaudin.	010c, 020c, 030c, 040cp, 100c, 110cp, 120c, 130c, 140cp, 150c, 160cp, 170cp, 280c, 300c, 370c, 410ps, 500acp, 510acp, 530a, 540a, 550a, 560a, 570a, 590a, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660pm, 680cpm, 690cpm, 700ps, 710s, 750s, 800c, 820c, 830c, 840c, 850c, 870c, 890c, 910s.
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VERMONT

BURLINGTON: University of Vermont----- Chemical laboratories, G. H. Brewer. Mineralogical and geological laboratories, E. C. Jacobs. Dairy products testing laboratory, J. L. Hills. Agricultural experiment station laboratory, J. L. Hills. Mechanical engineering laboratory, V. R. Yates. Materials testing laboratory, L. B. Puffer. State laboratory of hygiene, C. F. Dalton. Zoology laboratory, H. F. Perkins. Botany laboratory, G. P. Burns.	000b, 010cb, 020cb, 100c, 110c, 140c, 240c, 400p, 410p, 500ch, 510p, 560i, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700ps, 710ps, 720ps, 730ps, 740ps, 750ps, 760ps, 770ps, 780ps, 790ps, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

VERMONT—Continued

Location and name of laboratory	Commodities and nature of tests ¹
NORTHFIELD:	
Norwich University-----	410p, 510p, 600cp, 610cp, 700s, 710s.
Electrical laboratory, F. A. Spencer.	
Civil engineering laboratory, A. E. Winslow.	
Mechanical laboratory, W. D. Emerson.	
Chemical laboratory.	
WINOOSKI:	
Saint Michael's College-----	010c, 040c, 140c, 150c, 160c, 280c,
Chemical laboratory, F. S. Quinlan.	500pc, 570c, 590pc, 630c, 640c, 650c,
Physical laboratory, E. Alliot.	680c, 690c, 800c, 820c, 830c, 840c,
	850c, 860c, 870c, 880c, 890c, 970pc.

VIRGINIA

BLACKSBURG:	
Virginia Polytechnic Institute-----	020c, 040c, 050p, 100c, 110c, 120c, 130c,
Agricultural experiment station, A. W. Drinkard.	140c, 150c, 160c, 170c, 400p, 410s,
Engineering experiment station, J. S. A. Johnson.	510pc, 600p, 700s, 710s, 720s, 730s,
	910s.
CHARLOTTESVILLE:	
University of Virginia-----	400p, 500p, 510pc, 600pc, 610pc, 620pc,
Experimental engineering laboratory, Charles Henderson.	630pc, 640pc, 650pc, 680pc, 690pc.
Analytical chemistry laboratory, John H. Yoe.	
LEXINGTON:	
Virginia Military Institute-----	410p, 500p, 510p, 600p, 610p.
Chemical laboratory, Hunter Pendleton.	
Physics laboratory, Francis Mallory.	
Electrical laboratory, S. W. Anderson.	
Biological laboratory, J. M. Player.	
Mineralogical laboratory, Edward Steidtmann.	
Washington and Lee University-----	500ch, 510p, 600cp, 610cp, 660c, 700s,
Electrical laboratory, R. W. Dickey.	710s.
Civil engineering laboratory, W. T. Lyle.	
Chemical laboratory, J. L. Howe.	
Geological laboratory, H. D. Campbell.	
Physical laboratory, B. A. Wooten.	
Biological laboratory, W. D. Hoyt.	

WASHINGTON

PULLMAN:	
State College of Washington-----	010c, 020c, 040c, 100c, 110c, 120c, 130c,
Chemistry laboratory, C. C. Todd.	140c, 150c, 160c, 170c, 200s (tires),
Botany laboratory, F. L. Pickett.	220c, 240c, 410p, 500cp, 510p, 530cp,
Engineering experiment station laboratory, H. V. Carpenter.	550s, 570c, 600p, 610p, 630p, 640p,
Pharmacy laboratory, P. H. Dirstine.	690p, 700s, 710s, 720s, 800c, 810c,
Experimental station laboratory, J. L. St. John.	820c, 830c, 840c, 850c, 860c, 870c,
	880c, 890c.
SEATTLE:	
University of Washington-----	020c, 030cb, 040cp, 060c, 090pc, 100cb,
Chemistry and chemical engineering laboratory, H. K. Benson.	110cb, 120cb, 130cb, 140c, 150c, 160c,
Fisheries laboratory, John Cobb.	170c, 200c, 210cs, 220c, 230cp, 250i,
Forestry laboratory, Hugo Winkenwerder.	260c, 280cs, 290cb, 300c, 310c, 360c,
Physics laboratory, F. A. Osborn.	370c, 400i, 410ps, 420p, 430p, 470psc,
Mining, metallurgical, and ceramics laboratory, M. Roberts.	500chl, 510pc, 520pc, 530pc, 540p,
Electrical, mechanical, and civil engineering laboratories, C. E. Magnusson.	570c, 590cps, 600cpm, 610cpm,
	620cpm, 630cpm, 640cpm, 650cpm,
	660cpm, 680cpm, 690cpm, 700s, 710s,
	720s, 750s, 790s, 800c, 810c, 820c,
	830c, 840s, 850c, 860c, 870c, 880cb,
	890c, 910sp.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

WEST VIRGINIA

Location and name of laboratory	Commodities and nature of tests ¹
MORGANTOWN:	
West Virginia University-----	020p, 100p, 110c, 130c, 240p, 250i, 410p,
Agricultural chemistry laboratory, R. B. Dustman.	500c, 510cp, 520c, 530c, 570c, 600cpm,
Feeds and fertilizer laboratory, T. B. Leith.	610cpm, 620cpm, 630cpm, 640cpm,
Seeds laboratory, H. K. Rowley.	650cpm, 660cpm, 680cpm, 690cpm,
Engineering chemistry laboratory, William Hodges.	700s, 720s, 750s, 800cp, 810cp, 820c,
Department of chemistry laboratory, Friend E. Clark.	830cp, 840cp, 850cp, 870cp, 880cp.
Experimental engineering laboratory, J. B. Grumbein.	
Mechanical laboratory, C. R. Jones.	
Electrical laboratory, A. H. Forman.	
Plant pathology laboratory, N. J. Giddings.	
Entomology laboratory, L. M. Peairs.	
Dairy laboratory, E. L. Anthony.	

WISCONSIN

MADISON:	
University of Wisconsin-----	000p, 020cp, 060a, 110c, 240cs, 290p,
Chemical engineering laboratory, O. L. Kowalke.	300a, 330a, 360a, 390cp, 400p, 410p,
Mining and metallurgy laboratory, R. S. McCaffery.	470a, 500c, 510p, 530p, 570p, 590cp,
Materials testing laboratory, M. O. Withey.	600cpm, 610cpm, 620cpm, 630cpm,
Electrical engineering laboratory, E. Bennett.	640cpm, 650cpm, 660cpm, 680cpm,
Mechanical engineering laboratory, G. L. Larson.	690cpm, 700s, 710s, 720s, 750s, 780s,
Hydraulic laboratory, C. I. Corp.	790s, 820c, 830c, 880c, 890c, 910s.
Veterinary science laboratory, F. B. Hadley.	
Dairy science laboratory, E. H. Farrington.	
Feeds and fertilizer laboratory, Walter Griem.	
Seed-testing laboratory, A. L. Stone.	
Drainage laboratory, E. R. Jones.	
Textile laboratory, Miss E. Millstrom.	
Forest products laboratory, C. P. Winslow.	
Soils laboratory, C. J. Chapman.	
MILWAUKEE:	
Marquette University-----	000pc, 010pc, 020pc, 030pc, 040pc, 1,40c
Structural materials laboratory, Theo. H. Trams.	160c, 170c, 230c, 410p, 510pc, 530pc,
Bio chemistry laboratory, J. C. Bock.	600pc, 610pc, 640pc, 800pc, 810pc,
Pathology and bacteriology laboratory, E. L. Miloslavick.	820pc, 830pc, 850pc, 870pc, 880pc,
Pharmacology laboratory, H. T. Beckman.	890pc.
Anatomy laboratory, E. J. Carey.	

WYOMING

LARAMIE:	
University of Wyoming-----	000b, 010c, 020cb, 030c, 040c, 090c,
Wool and textile laboratory, J. A. Hill.	100c, 200c, 240b, 300cp, 410p, 510p,
Chemistry laboratory, O. A. Bently.	530p, 600p, 610p, 620p, 630p, 640p,
Bacteriological and pathological laboratory, C. Elder.	650p, 680p, 690p, 800c.
Seeds laboratory, A. F. Voss.	
Engineering laboratory, E. D. Hay.	

¹ See pp. 1 and 2.

FACILITATING THE USE OF SPECIFICATIONS

An analysis of the status of the making and the utilization of specifications reveals the fact that many excellent specifications well recognized throughout industry are not being widely used at the present time because of the inability on the part of most purchasers to determine whether or not commodities delivered correspond to the specification requirements. A great impetus to the popularizing of the use of specifications can be given by eliminating this disadvantage to the small-quantity purchaser.

As a solution to the problem of eliminating the above-mentioned disadvantage and thereby facilitating the use of specifications, use is being made of the so-called certification plan.

CERTIFICATION PLAN

In carrying out this plan there are compiled lists of manufacturers who have expressed their desire to supply material in accordance with certain selected specifications and willing to certify to the purchaser upon request that the material thus supplied is guaranteed to comply with the requirements and tests of the specifications.

From time to time the State and other public purchasing agents have sought the assistance of the United States Department of Commerce in the formulation of standards, specifications, and methods of tests for their purchases. Every effort is therefore being exerted to make the certification plan as effective as possible for "public purchasers," that is, purchasers for the Federal, State, and municipal governments who are spending the money collected from the public in the form of taxes.

There have already been compiled by the National Bureau of Standards 48 lists of such firms as have expressed to the bureau (up to April 1, 1927) their desire to have their name placed on the lists of manufacturers willing, when requested to do so, to certify to purchasers that material supplied in accordance with the designated 48 United States Government master specifications complies with the requirements and tests of these specifications and is so guaranteed by them. Copies of any of these lists of manufacturers, to which additions are being made from time to time, can be obtained upon request. The specifications referred to are as follows:

Specifi- cation No.	Commodities covered	Specifi- cation No.	Commodities covered
23.	Large tungsten filament incandescent electric lamps.	196.	Brush, deck scrubbing.
36a.	Fire-extinguishing liquid (carbon tetrachloride base).	197.	Brush, hand-floor scrubbing.
52.	Wood screws.	198.	Brush, hair, military.
55.	Cut-out bases.	199.	Brush, radiator dusting.
57.	Flexible nonmetallic tubing.	200.	Brush, shaving.
58.	Dry cells.	201.	Brush, sidewalk.
62.	Snap switches.	202.	Brush, tooth.
65.	Rubber-covered wires and cables for ordinary purposes.	203.	Brush, window.
123.	Flat glass for glazing purposes.	204.	Broom, rattan push.
124.	Hand chemical fire extinguishers (1 quart carbon tetrachloride type).	205.	Broom, rattan (upright).
175.	Knife switches.	206.	Broom, scrubbing.
191.	Brush, blacking and dauber.	207.	Broom, wire push.
192.	Brush, casting.	208a.	Duster, counter.
193.	Brush, clothes scrubbing.	213.	Hand chemical fire extinguisher (soda-and-acid type).
194.	Brush, cuspidor.	242.	Wrought-iron pipe (welded), black and galvanized.
195.	Brush, dauber, long paddle.	287.	Tubing, copper, seamless, and pipe, copper, seamless, standard iron-pipe size.
		291.	Friction tape.

Specifi- cation No.	Commodities covered	Specifi- cation No.	Commodities covered
292.	Rubber insulating tape.	342.	Pipe, brass, seamless, iron-pipe size, standard and extra strong.
297.	Wire rope.	343.	Cast-iron soil pipe and fittings, coated and uncoated.
311.	Rigid conduit, enameled.	347.	Lapwelded and seamless steel boiler tubes.
312.	Rubber gloves for electrical workers (for use in connection with apparatus or circuits not exceeding 3,000 volts to ground).	349.	Lapwelded charcoal iron boiler tubes.
314.	Railroad-track scales.	362.	Liquid-measuring devices, retail type.
332.	Broom, whisk.	363.	Burglar-resisting safes.
333.	Broom, corn.	411.	Tableware, silverplated.
336.	Builders' hardware.		

Organized for the purpose of securing economy in the procurement of material used by the Government, the Federal Specifications Board makes a strenuous effort to adopt such specifications as will cover commercial materials and supplies. Before the specifications are promulgated as official United States Government master specifications for the mandatory use of the departments and establishments of the Government, comments and criticisms from the manufacturers and interested engineering and technical societies are given careful consideration. A list of the specifications thus far adopted by the board is given in Bureau of Standards Circular No. 319, which can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents per copy.

Among the duties assigned to the board are not only the compilation and adoption of standard specifications for materials and services, but also the bringing of the Government specifications into harmony with the best commercial practice whenever conditions permit, bearing in mind the broadening of the field of supply.

Encouraging the maximum possible number of purchasing agents to make use of the specifications of the Federal Specifications Board would broaden the field of supply by inducing the maximum possible number of persons to manufacture commodities meeting the requirements of the Federal Government. Moreover, the widespread use of specifications of the Federal Specifications Board would serve to draw attention to such modifications as might well be made therein in order to render them satisfactory to the buying public and to bring them into harmony with the best commercial practice.

Reference is made herein specifically to United States Government master specifications as the lists referred to are those of manufacturers willing to certify to compliance with these specifications. However, the plan outlined could readily be, and is being, applied to other groups of nationally recognized specifications. It is to be expected that the application of the plan will be of benefit not only in the general promotion of the use of specifications by both the small and the large consumers, but also in the unification of specifications having national recognition.

BUREAU OF STANDARDS PAMPHLETS ON TESTING

(Continued from p. 2 of cover)

Radio receiving sets, some methods from testing, T256. Price, 10 cents.	Tanning materials, synthetic, analysis of, T316. Price, 10 cents.
Rods, straight, in intense fields, magnetic testing of, S361. Price, 5 cents.	Thermometers, clinical, testing of, S13. Price, 15 cents.
Rope, wire hoisting, nondestructive testing of by magnetic analysis, T315. Price, 10 cents.	Tiles, hollow building, tests of, T120. Price, 5 cents.
Rubber goods, testing of, C38. Price, 20 cents.	Timepieces, tests of, and measurement of time, C51. Price, 15 cents.
Scales, large capacity, method for precision tests of, T199. Price, 5 cents.	Transformer steel, the testing of, S109. Price, 5 cents.
Soaps, specifications for and methods of testing, C62. Price, 5 cents.	Transformers, current, a method for testing, S309. Price, 5 cents.
Sugars, influence of atmospheric conditions in the testing of, S221. Price, 10 cents.	Transformers, instrument, a watt-hour meter method of testing, S233. Price, 5 cents.
Supplies, miscellaneous, including paints and paint materials, inks, lubricating oils, soaps, etc., some technical methods of testing, M15. Price, 15 cents.	Transformers, potential, testing, S217. Price, 5 cents.
	Tubing, gas, tests of flexible T133. Price, 10 cents.

A DIRECTORY OF SPECIFICATIONS

Considerable economy can be realized in the purchase of commodities by the use of specifications. Real competitive bidding can be invited, and the delivery of satisfactory material can be insisted upon. To an ever-increasing extent State and city governments, public utilities, and the better organized industries of the country are adopting the use of specifications, which has been a feature of Federal Government purchasing for many years.

Information regarding the best known specifications for more than 6,000 commodities is given in convenient form in the National Directory of Commodity Specifications, which has been issued by the Bureau of Standards with the cooperation of the Bureau of Foreign and Domestic Commerce of the Department of Commerce. The book tells not only what specifications are in general use, but also by whom they were prepared and where copies can be obtained. In it are conveniently indexed for ready finding about 27,000 specifications prepared by the Federal Specifications Board and the separate departments of the Federal Government, by State and city purchasing agents, public utilities, technical societies, and trade associations. At the request of Secretary Hoover an advisory board was selected by these interests to represent them in supervising the preparation of the Directory.

The contents include: A statement and indorsement by the advisory board, a foreword by Secretary Hoover, a thoroughly classified list of specifications for all types of commodities. There are also included an alphabetical list of commodities, which serves as an index to the specifications, and directions for obtaining copies of specifications listed in the Directory.

Summary of commodities and specifications therefor

Decimal class	Commodity groups	Commodities indexed	Approximate number of specifications
000	Animal and animal products.....	350	1, 600
100	Vegetable food products, oil, seeds, expressed oil, and beverages.....	525	2, 100
200	Other vegetable products (except fibers and wood).....	400	800
300	Textiles.....	275	1, 900
400	Wood and paper.....	625	3, 300
500	Nonmetallic minerals.....	725	3, 300
600	Ores, metals, and manufactures (except machinery and vehicles).....	1, 700	6, 400
700	Machinery and vehicles.....	800	2, 900
800	Chemicals and allied products.....	600	2, 400
900	Miscellaneous.....	650	2, 400
	Total.....	6, 650	27, 100

Whether you are a producer or a consumer, a seller or a buyer of commodities; whether you are interested in the preparation or in the use of specifications, the Directory contains for you information which you can not afford to do without. It is printed in small, but legible type, and thus the number of pages has been kept at the minimum, 385, without sacrificing the usefulness of the Directory. It is bound in cloth.

The cost of printing and binding the book at the Government Printing Office is \$1.25.

DIRECTIONS FOR OBTAINING THE DIRECTORY OF SPECIFICATIONS

Copies of the National Directory of Commodity Specifications may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by sending with the order a remittance either in the form of post-office money order, coupons (issued for the specific purpose of purchasing Government publications), express money order, New York draft, or cash—at the sender's own risk. It is important to follow these directions explicitly to avoid delay and confusion. If the Directory is to be shipped to a foreign country (other than Mexico and Canada), add one-third to the price, making the total \$1.67.